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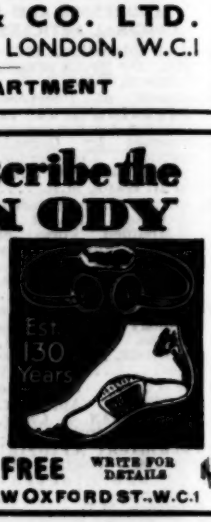

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MEDICAL EDUCATION, 1760–1934 *

BY SIR CUTHBERT WALLACE, K.C.M.G., C.B., F.R.C.S. Eng.

CONSULTING SURGEON TO ST. THOMAS'S HOSPITAL

To understand the opportunities offered to a student of surgery in John Hunter's times, one has to recall the nature of the medical education of the period. It was almost entirely of the apprenticeship system, a great part of which system remains to this day in England. The student usually served a matter of five or seven years, after which, if he wished to practise in London, he had to be admitted into a corporation. To do this he had to obtain the recommendation of somebody of position, or undergo a viva-voce examination which was apt to be more brutal than efficient.

Although there were differences between the hospitals, there was little or no systematic instruction given at these institutions. The lectures that were available and open to the student were delivered by various people at the halls or as private ventures on their own premises. The courses, which varied much in length, were often given late in the afternoon or early evening, at a time when the present-day student expresses himself as tired and mentally unreceptive. The lectures were apparently open to the public, thus showing that the laity were even then interested in medicine. Some courses were devoted to single subjects, but others, to our present-day ideas, seem a strange jumble of subjects, consisting as they did of anatomy, comparative and human, animal economy or physiology, operative technique, fractures and dislocations, midwifery, and bandaging. Bandaging seems to have been considered important and interesting; nowadays it is beneath the dignity of a student. Thus we have an interesting example of the changing value of subjects in medical education, of which we are rather apt to lose sight. Even with all this variety of subjects the lectures were considered to require a little spice, as we find that the demonstration of a monster was sometimes added as a special attraction. John Hunter was very interested in monsters, and recognised that they fell into different classes; he also knew that the prenatal period was a history of ancestors.

When Hunter became a surgeon to St. George's Hospital he tried to arrange that lectures should be delivered at the hospital to the pupils and apprentices. He was strenuously opposed by his colleagues, who asserted that lectures were of little use, thus expressing an opinion which, after a hundred and fifty years, is again being freely stated. Hunter, however, hinted that the reason lay in another direction, and that the real cause of the opposition was the fear of the staff to expose their own ignorance. He carried the battle further and accused his colleagues of taking money from their pupils and apprentices and doing nothing to earn it. This effort, though at first abortive, helped the movement that was gaining ground to take medical education out of private hands and establish it at the great hospitals. He appears at last to have converted his colleagues, as in 1793 we find that they complained that the students had to go for their anatomy to Windmill-street, for their midwifery to Golden-square, for their chemistry, materia medica, and practice of physic to Leicester-fields, and thus lost considerable time. The recognition of the disadvantage of spreading medical education over several institutions is interesting in the light of developments that are taking place to-day.

Hunter never served an apprenticeship. The instruction he received seems very fragmentary and discontinuous; in fact it might almost be described as an interlude to his work in his brother's school. One must remember, however, that in this school Hunter must have been brought into contact with many men and listened to their opinions and conversation. He thus was undergoing all the time a type of education that was really suitable to a man who was receptive, independent, and capable of being his own tutor.

Although the length of medical education was not dissimilar to that of the present day the circumstance of that education was very different. On the one hand we have an education where everything depended on the student's own perseverance, receptiveness, and determination; no ordered course of study; the man chose his own teachers and hospitals, and very often went abroad for a time. At the present time all is ordered and ordained. First of all a certain standard of general education is demanded; then a course in which the subjects, the sequence in which they are to be taken, and the length of time devoted to each, are accurately defined, even in some cases to a matter of hours. There are signs, too, that there will be further subdivisions of this time, so that in the end there will be but little opportunity for self-education, mental digestion, or reflection. In fact, we are moving away from the academic and to trade-school ideas of education. It seems also possible that even after graduation or qualification the curriculum will still maintain its grip upon the individual to the time of his death. A short while ago, when the increasing complexity of subjects demanded more time, and it was evident that the proportion of man's life devoted to medical education could not be increased, an attack was made on the time usually given to general education in the secondary schools. To judge by the ability of many students to put their ideas clearly and succinctly on paper, and remembering Hunter's defect, this seems a mistaken policy and it would be wiser to let the schoolmaster conduct his own business in his own way.

No one will deny that medical education has benefited by the guidance of a central body. On the other hand, a common curriculum has some disadvantages. It is a compromise and, as such, has been and probably always will be a subject of criticism. It tends to produce a sameness in the schools and universities. It takes no heed of individuals. It is possible that, in the desire to improve the standard of medical education, we have gone too far in centralisation of control. A common curriculum means that no one education authority is doing what it really desires or believes best. Would it not be better to allow greater discretion so that individual schools could develop different characteristics?

In 1760 Hunter was appointed staff surgeon in the army and in the following years he took part in the capture of Belleisle. He arrived there with some definite opinions on the proper way to treat wounds, though whence he had acquired that knowledge is not clear. The war of 1914–18 was similar to this little war of 1761 in that it was productive of criticism of one's colleagues. Hunter prepared nothing about

* The Hunterian Oration (abridged) delivered before the Royal College of Surgeons of England on Feb. 13th, 1934.

his war experiences for publication until many years had passed, thus showing at all events a remarkable literary continence for a surgeon who had seen active service. This work, which was not published until 1794, in the year following his death, states that the war had given him the opportunity of studying inflammation, about which he says he had constantly thought during the years which had elapsed. If one substitutes "infection" for "inflammation" the problem that interested Hunter and the surgeons in the great war was remarkably similar. Even to the end of the great war the surgeon was without the means of combating established infection, though by the rough-and-ready way of excising the wound while still only contaminated he succeeded in preventing infection. This pamphlet, like much of Hunter's writing, is a difficult document to read and to understand. It contains nothing very arresting. I doubt if it was of great use to the surgeons that went to the war which was again starting, but it contains matter which is of interest to a generation that has known a great war. Just as in the great war, amputations and the opening of wounds were exercising the minds of the surgeons.

It was debated whether an amputation should be done while the patient was "hot from the fight" or as a secondary procedure. Hunter supported the latter; it was given a trial, but eventually abandoned on account of a high mortality. The second point of dispute was whether the almost universal practice of opening all wounds should be continued. Hunter made the sound remark that it should only be done if there were an object to be gained. His influence apparently led to wounds being only opened when inflammation had set in. In the South African war the wounds were for the most part left untouched and did well. In the world war the opening of the wounds was the salvation of the soldier. From this it would appear that it is largely futile to enter upon any war with a fixed idea as to the proper treatment.

Hunter also made the interesting remark that there was nothing peculiar about war wounds; they were simply contused wounds. He expressed the opinion that it was a pity that they were regarded as something apart. The term "military surgery" is, I think, an unfortunate one. There is only one surgery—namely, the best that the time has produced. The only difference between surgery in peace and surgery in war is that in peace you are enabled to do what is right and in war you have to strive, in adverse circumstances, to do what you know is right—that is, to approximate your practice to that of civil life.

It does not seem that Hunter's war had any material effect on the art of surgery or on the conditions under which it was practised. The number of surgeons, the number of wounded, were small, and Hunter published nothing at the time. In like manner, turning to the war of our generation, I should say that it introduced little improvement in the practice of the art. It is true that it gave rise to much ingenuity in mechanical contrivances and that it popularised methods and apparatus already in use. It revived, for a time, the early days of the antiseptic period, and gave us a whole rainbow of coloured antiseptics, but finally proved the Listerian principle that the best way to combat infection was to prevent the lodgment in the body of the infecting agent.

A large number of doctors were taught a specialised kind of surgery, and, working under supervision, acquired considerable dexterity. This led to the idea that surgery was a matter of technique rather than of judgment. In the departments of medicine that affect surgery the war emphasised the value of prophylaxis in tetanus; it gave rise to the serum treatment of anaerobic infections, and it demonstrated the value of restoring the blood volume and gave birth to the chemical theory of shock. One hundred and fifty years ago medical science was represented almost entirely by the physician, the surgeon, and the general practitioner. Since that date medicine has split into many branches, some concerned with the actual practice of the art and others with subjects more or less allied, and lastly, others that only here and there touch the healing art. Necessity and the stimulus of the war brought all these branches again into contact. This coming together again of the sciences which had grown out of medicine was the most important effect of the war; it was a union which, in a humble way, was represented in the person of John Hunter.

Apart from the influence of the great war on the art of surgery and the stimulus that it gave to research, it may have a great future effect on what may be called the machinery or administration of medicine. It emphasised what had obviously long been a fact—that a disease might be a mischance that could no longer be diagnosed and efficiently combated by the knowledge and skill of one individual. It demonstrated what could be done by coördination of effort, when there was a good directorate and the workers were willing to subordinate themselves. It led to the thought that if a great army could be so efficiently kept in health or treated when sick, why should not a nation in peace be kept in health and treated when sick by a similar organisation? And lastly, the advantages of a salaried post over the continual struggle and anxieties of private practice began to loom large in the minds of many.

The reason that surgery made no great bound after Hunter as it did in Lister's time can, I think, be explained. In the first place Hunter left behind him no one at all comparable to himself. In the second place a very large part of his work was the study of normal processes. In this connexion Astley Cooper remarks:

> "Physiological knowledge is of the utmost importance to the professor of surgery; this gives you knowledge of the healthy functions, and thus enables you better to understand the nature of diseased action. This was the rock on which Hunter stood, admired by the wise and abused by the ignorant."

Though, as Cooper says, such knowledge is necessary for the proper understanding of disease it cannot in itself explain the departure from normal. Again, a great deal of Hunter's labours were purely biological, and could not be applied to medicine.

The problem of inflammation was one that interested Hunter more continually than any other, and was one that closely touched medicine. It was recognised that inflammation was the agent of repair, and therefore a process inherent in the individual, but the inflammation that arose apart from this was the crux that caused pages of involved language, and in the end remained unexplained. There is a third reason. To one educated in the post-Listerian period it is almost inconceivable that a system of medicine unpeopled by bacteria, moulds, or protozoa, and unilluminated by a knowledge of the cellular nature of the body, could advance with rapidity. It is not to be expected, therefore, that the years that came immediately after Hunter would show a great forward movement. It seems as if medicine was awaiting the advent of Virchow to produce his cellular pathology, of Pasteur

to solve the riddle of many diseases, of Lister to free the surgeon's hands, and of anæsthetics to diminish the fear of operations. It may be said that Hunter prepared the way to a new medicine rather than that he created a new world of surgery.

The problem of specialism and of the specialist, either from a practical or from an educational point of view, was not acute. Whether the physician or surgeon was to be considered as specialist depends on the individual point of view. The modern enthusiast for specialism would say that the general physician and surgeon are interesting relics of an honourable past; while the modern student, I expect, regards medicine, surgery, and obstetrics as natural divisions of medicine rather than specialties. The Ministry of Health regards them as the three bases of the healing art.

In those far-off days there were apothecaries, physicians, and surgeons. Some of the surgeons were possessed of special skill in lithotomy and couching for cataract, and to that extent were specialists, but, with these exceptions, the modern specialisms were still unseparated. The surgeons were taking their places alongside the physicians largely owing to the influence that Cheselden and Pott exerted, but even as late as 1825 we find Astley Cooper complaining of the interference of the physicians. This protest was caused by the prescription of a cathartic by a physician for a case of compound fracture which was under the care of Cooper. Obstetrics were passing from the midwives into the hands of those that confined themselves to that branch. It is interesting to note that there was a complaint that the instruction of students in this subject was defective.

Of late years specialism has grown apace. The old specialisms had their origin in the necessity for the possession of a special skill in the treatment of a special part. The later specialisms tended to be founded on special knowledge of a particular organ or a special disease, and the latest specialisms have origin in none of these things. Specialism has come to stay if only for the reason that the public demands it and the authorities that rule our education recognise it. Specialism is a form of division of labour or of knowledge, and as such should lighten the burden of the student working for a qualification. Unfortunately the opposite is the case, and the advent of a new specialty means a new burden. This will continue until it is recognised that specialism is a post-graduate function. It can even be said that general practice is a specialty, not because medicine and surgery as practised in hospital are different from those in general practice, but for the reason that the conditions under which they are practised are so different. It might be helpful if a hospital could arrange with some of its sons to take qualified students for a limited period as apprentices, thus returning, in a way, to an old custom.

The definition of quackery is difficult, but everyone knows what is meant by a quack. Nothing since the days of the Hunters has altered so little as this question. William Hunter was apprehensive that he might be judged one; John Hunter had no objection to meet them, and on one occasion tried unsuccessfully to induce the owner to part with a secret prescription of an ointment. Lettsom waged a war against them, but was beaten in the end. Some were complete impostors; many worked in the realms now ruled over by specialists, treating a class of case which the doctors for one reason or another were unwilling to undertake.

The borderline between regular and irregular practice was ill-defined, because there was no easy means of finding out whether or no a person had had a medical training. To distinguish a registered from an unregistered practitioner is now easy, but the facilities offered by the Medical Register have not in any way diminished the quacks; in fact, they are as flourishing as ever, and in some instances have copied the doctor and established a curriculum and a register. The high and low in the land seek their advice.

It is apparently impossible to persuade the public that the doctor is disinterested in his attitude toward irregular practice. Only recently I heard an individual high up in the academic world, who was discussing the subject, express the view that he had taught too many undergraduates to have any opinion of the value of the letters after a man's name. Under these circumstances would it not best become the profession to take its stand on the preamble of the Medical Act, and only ask to be clearly distinguished from those who have not had its medical training?

If Hunter were to come back and survey the field of medicine nothing would, I think, astonish him more than the position that research occupies to-day. The difference that exists between the times may perhaps be best brought out when we compare the rather simple investigations of Hunter's with those of Laidlaw and Dunkin for the *Field* distemper fund. These two investigators, starting with a disease of which the clinical symptoms had to be determined, worked for ten years, and expended £55,000 before they brought the disease under control. Research now works in a framework of careful organisation. In fact, the organisation has become a profession in itself. Here I would pay a tribute to Walter Fletcher, a man of great attainments, of far vision and foresight, a man who devoted his great powers to help the worker.

In those days there was little or no aid for the worker, who was self-supporting, and had to look to his own pocket to provide the means for investigation or experiment. John Hunter spent his fortune on his museum. To-day, partly by private beneficence and partly from government grants, there are large sums of money available which not only help the part-time worker, but support a small army of men who devote their whole time to their work. Connected with the research is the diffusion of knowledge. At the present time this is rapid, even to the ends of the earth; there are many professional societies and periodicals without end.

It is impossible to stop the progress of medicine, but progress may be helped or hindered by the conditions under which medicine works. In Hunter's time the profession consisted of individuals very loosely governed as regards education or conduct. It had very little contact with the state. The Elizabethan poor-law was still in existence, and the state paid little heed either to preventive or to therapeutic medicine. To-day we find a highly organised profession; and organisation, while it offers the possibility of resistance, also facilitates negotiations. The state controls a highly efficient preventive and therapeutic medical service; it is taking a greater and greater interest in education. There are some 20,000 doctors in receipt of public money. The war produced within the profession a considerable body of opinion favourable to a still greater control of medicine by the state. In the years to come we may be individuals linked together by a desire to stamp out or cure man's ills or we may be a swarm of workers in a national hive. In either case let us hope that the diligence, the curiosity, and the energy of John Hunter will be our guide.

TREATMENT OF PUERPERAL INFECTION DUE TO STREPTOCOCCUS PYOGENES BY ORGANIC ARSENICAL COMPOUNDS

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FIVE years ago it was shown [1] that following the injection of one of the trivalent arsenicals, Salvarsan, Neosalvarsan, or Sulpharsphenamine, in the doses commonly used for the treatment of syphilis, the patient's serum (or plasma) acquired a considerable power to kill *Streptococcus pyogenes*. When the whole blood (defibrinated), instead of serum, was tested, a much increased streptocidal power could sometimes, but not always, be demonstrated. Inasmuch as this acquired bactericidal power could be maintained for several hours or even days by repetition of the arsenical doses, there was reason to hope that it would help to bring about the destruction of hæmolytic streptococci in an infected patient. In such a patient the bactericidal plasma might be expected to kill off any streptococci which are already present in the circulating blood and possibly also those in the blood reservoirs, such as the spleen; while if the arsenical passed in sufficient quantity from the blood plasma into the lymph of the infected tissues of the genital tract, it might help to check the development of an incipient infection.

Those were our hopes—and they were quickened by the fact that these arsenicals had already proved themselves capable of controlling such widely different infections as those of syphilis, rat-bite fever, and anthrax. It was explicitly pointed out, however, that these happy results could not be counted upon in the streptococcal infections with any assurance. We knew that the blood stream of many cases of septicæmia, if once sterilised by the arsenical, would be constantly reinfected from a septic clot in one of the large pelvic veins or from the peritoneum; and there was reason to fear that transudation of the arsenic-bearing plasma from the blood stream into the lymph of the infected pelvic tissues might often be inadequate.

Other factors also might lead to failure—e.g., the slowness of the bactericidal action, coupled with the rapidity of excretion of the drug; possible damage to the patient's leucocytes or fixed tissue cells; or the development of "arsenic fastness" by the streptococci during treatment.

In spite of these uncertainties—uncertainties of a kind which confront almost every new therapeutic measure—it seemed that there was sufficient warrant for making an extended trial of the arsenicals in the treatment of puerperal infection by hæmolytic streptococci. They had, indeed, been used in France in a large number of such cases with (it was said) great success, but inasmuch as there was usually no discrimination between cases infected by hæmolytic streptococci and those which were not, and as several other methods of treatment were frequently employed at the same time, the reports do not carry conviction. In our own experience we had been encouraged by one fully worked-out case in which the blood had apparently been freed from streptococci concurrently with the development of increased streptocidal power by the administration of a series of doses of Metarsenobillon (sulpharsphenamine). The clinical details of this case were reported by Dr. Arthur Morris,[2] of the Hammersmith Hospital, and the laboratory data in the report to the Medical Research Council.[1]

As suitable cases occurred they were treated—usually with a similar series of doses—at St. Mary's Hospital, the Hammersmith Hospital, St. Mary Abbot's Hospital, the North Western and South Western Fever Hospitals (by the courtesy of the Metropolitan Asylums Board and later the London County Council), and more recently at the Isolation Block of Queen Charlotte's Hospital. To our clinical colleagues at these hospitals our thanks are due for their collaboration and for permission to include their cases in this report. To Mr. James Wyatt, Consultant to the L.C.C., to Dr. Ruby Inkster of the North Western Fever Hospital, and to Dr. Morris of the Hammersmith Hospital, we are especially indebted for their coöperation.

The present survey includes some 66 cases treated by the arsenicals, and, for comparison with these, a number of untreated cases. All were known to be infected with hæmolytic streptococci. The treated cases usually received a series of 4–6 intramuscular injections of 0·3 g. metarsenobillon, or the similar preparation Kharsulphan, at increasing intervals—e.g., 6, 15, 24, 48, and 72 hours. A few received one or two somewhat larger doses, 0·6 g. of neosalvarsan, intravenously.

No other special treatment was given at the same time, with the exception of the instillation of glycerin into the uterus once or several times daily in order to promote a flow of lymph carrying the arsenical through the infected tissues. (As ancillary to this lymphagogue treatment by glycerin large doses of citric acid were also given by the mouth.)

Results of Treatment

The cases may conveniently be divided into three groups which differ widely in their tendency to spontaneous recovery and also to some extent in their pathology. These are:—

Group A.—Twenty-nine cases in which arsenical treatment was begun while the infection was believed to be limited to the tissues of the birth canal. Their blood cultures were negative. Only the most severe cases of this class, with high fever, were chosen for treatment.

Group B.—Twenty-eight cases in which arsenical treatment was instituted after invasion of the blood stream by streptococci had occurred (positive blood culture). These cases had no signs of peritonitis.

Group C.—Nine cases in which at the time arsenical treatment was instituted there were already definite signs of generalised or generalising peritonitis. In several of them there was also a blood-stream infection.

GROUP A

The clinical course of the 29 treated cases in Group A was usually very satisfactory—a progressive fall of temperature and pulse-rates coinciding with the treatment, and sometimes in so striking a fashion as to make it seem likely that the arsenical had exerted a definite effect. It is, however, very difficult to draw any definite conclusion from cases of this type. In the majority of them, given good nursing and lymph drainage of the infected tissues, the streptococcal invasion remains localised to the uterus and any lacerated areas in the vagina and perineum.

Such cases almost always make a spontaneous and rapid recovery without any specific treatment, and one can scarcely hope to demonstrate the favourable

* Working with a whole-time grant from the Medical Research Council.

effect of any therapeutic measures employed unless this is of a very striking character, bringing about an immediate fall of temperature by crisis and disappearance of living streptococci from the lochia and discharges. Arsenical treatment in our experience has not had these dramatic effects.

In about 20–40 per cent of the cases, however, which begin as localised infections of the genital tract, the process extends, either by direct spread or by way of the lymph or blood channels, to the extra-uterine cellular tissues, the peritoneum, or more remote structures. With such an extension the patient's condition takes on a more grave aspect. We have sought to find out whether the arsenical treatment of the 29 cases had any effect in diminishing the incidence of these dangerous developments of the genital tract infection. For that purpose we have taken for comparison the records of 38 cases of similar type treated in the Isolation Block of Queen Charlotte's Hospital on the same lines, but without arsenic.

The findings in the two series are compared in the accompanying Table.

Table showing cases of infection which was localised to the tissues of the genital tract (i.e., cases without septicæmia or diffuse peritonitis).

—	Cases.	Cases in which the streptococcal invasion extended beyond the tissues of the birth canal.	Died.
Treated by arsenic.	29	5 cases pelvic cellulitis (17 %). 2 ,, cellulitis of leg. 2 ,, pleurisy with effusion. — 9	1*
Not treated by arsenic.	38	13 cases pelvic cellulitis (34 %). 1 ,, phlebitis of leg. 1 ,, pleurisy. 1 ,, erysipelas. 2 ,, septicæmia. — 18	1†

* Death from general peritonitis which resulted from intra-peritoneal operation for drainage of a pelvic abscess.
† Death from septicæmia due to thrombophlebitis of the saphenous veins.

These records certainly suggest that the arsenical treatment did help to check the spread of the infection in some of the cases. This conclusion must, however, be accepted with a certain reserve because puerperal fever cases, even when we segregate those due to *Streptococcus pyogenes*, are not really satisfactory material for statistical analysis. They present too many points of difference—e.g., in respect of the degree of trauma, the condition of the mother after labour, and the "invasiveness" of the streptococcus concerned.

LABORATORY OBSERVATIONS

We found, as mentioned above, that *S. pyogenes* did not disappear from the lochia during treatment by the arsenicals. In view of that result we thought it would be of interest to ascertain whether arsenic was present in the lochia and in what concentration.

Estimations carried out by our colleague Dr. A. T. Fuller, with Thorpe's modification of the Marsh method, showed that the amount of arsenic in the lochia was usually very small. In four tests out of five, less than 1 part in 500,000 was present; in the fifth sample, taken three hours after a dose of 0·6 g. N.A.B., there was 1 part in 60,000. Previous in-vitro experiments had shown that this last concentration —1 in 60,000—would suffice to kill hæmolytic streptococci if maintained for several hours. The weaker concentrations found in the other tests would have little or no direct bactericidal effect. It is, of course, possible that there might be a greater concentration of arsenic in the lymph spaces of the uterine wall. That we have been unable to determine, but it must be regarded as improbable in view of the peculiarly bloodless condition of the involuting uterus (vide discussion infra).

GROUP B

The next group (septicæmia without peritonitis) comprises 28 cases treated by the arsenicals—of whom 11 have recovered—i.e., 40 per cent. In 3 of the non-fatal cases the circumstances of recovery suggested that the arsenic had played a part. They may be very briefly described:—

Mrs. A. gave positive blood cultures before admission, and also on admission, with more than 80 streptococcal colonies per c.cm. of blood. Thirteen subsequent blood cultures gave smaller growths of streptococci but finally the blood became sterile. Although her blood was not

× Indicates intramuscular injection 0·3 g. metarsenobillon.

immediately sterilised under arsenical treatment, it seems very unlikely that this patient would have recovered spontaneously from such a severe septicæmia.

Mrs. B. had a positive blood culture when she came under observation three months after the original onset of fever. Her chart (see Figure) speaks for itself.

Mrs. C., whose case has already been referred to, had been febrile for four weeks before admission to hospital. Her blood was positive on two occasions but at once became sterile and remained so continuously under treatment. Her temperature only slowly returned to normal.

At first sight it would seem that a recovery-rate of 40 per cent. in septicæmia due to *S. pyogenes* points to a definite therapeutic success. But on hunting our records for other cases of this type—i.e., cases in whom peritonitis can be excluded by entire absence of physical signs during life or by post-mortem examination—we were surprised to find an almost identical recovery-rate for those that did not have arsenical treatment.† There were 19 cases in this control group, of whom 8 survived (42 per cent.). Some of them were treated by antitoxic or anti-hæmolysin serum (kindly supplied by Dr. E. W. Todd), some by immuno-transfusion, some by large doses of vitamin A, some by perchloride of mercury or mercuro-chrome. There was no clear evidence that any of these agents exerted a controlling influence upon the septicæmia.

As stated above, the treatment of these septicæmic cases by arsenicals was undertaken in the hope that it would at least kill off any streptococci in the circulating blood. That hope has, for the most part, not been realised. Sometimes the blood cultures showed for a time a diminished number of streptococci, sometimes they became sterile, but in the majority of the cases this did not occur.

The reason for this failure was frequently revealed post mortem. Seven cases out of 14 on whom an autopsy was performed were found to have more or less disintegrated septic clots in one or more of the large pelvic veins. Frequently these veins were full of pus and there was also extensive involvement of

† In relation to these records it should be pointed out that there were one or two cases in each group who would not have been classed as having a septicæmic infection on clinical grounds alone. They were never seriously ill but the routine blood culture on admission happened to catch a very small number of streptococci (usually less than one colony per c.cm. of blood).

the perivascular lymphatics. The ovarian veins were most commonly affected and the clot often extended right up to the opening into the vena cava so that its proximal end was continuously washed by the stream in that vessel. Two other cases had abscesses in the retroperitoneal tissues which had probably originated from septic clots in smaller veins. In two other cases there was early endocarditis, and in another endophlebitis of the inferior vena cava.

GROUP C

Nine cases with diffuse peritonitis were treated with arsenicals. In eight of them clinical evidence pointed to the existence of a generalised peritoneal infection *before* the treatment was begun. Every case in this group died and there was no clear indication as to whether the treatment had had any effect, either favourable or unfavourable.

It may be added that four of the cases had a blood-stream infection as well as the peritonitis; and three were found post mortem to have thrombophlebitis of one or more of the large pelvic veins. Laparotomy and drainage of the pouch of Douglas was performed in only two cases—as the importance of this procedure at an early stage had not been recognised at that time.

Results of Animal Experiments

In the hope that animal experiments might show more clearly whether an increased bactericidal power of the blood would suffice to check an incipient infection by *S. pyogenes* a number of mice artificially infected with that microbe were treated by metarsenobillon or novarsenobillon.

Preliminary experiments showed that one hour after an intraperitoneal dose of 0·002 to 0·006 g. of metarsenobillon in mice weighing 15 to 20 g. the killing-power of the serum for hæmolytic streptococci was much increased; but a larger dose, 0·008 g., was necessary before any increase in the bactericidal power of the *whole blood* could be demonstrated.

Injections of this latter dose, 0·008 g., into the peritoneum, one hour after an intraperitoneal infection with streptococcal culture gave clear evidence of curative effect. Twelve mice survived out of 14 so treated, while 7 of the 9 controls died within 36 hours. Smaller doses of the drug were ineffective, and the 0·008 g. dose was also ineffective if deferred till two hours after the infection. (It is possible that a part of the curative effect in the 12 mice supra was due to direct action of the drug on the streptococci in the peritoneal cavity).

Other experiments in which mice were treated by a series of subcutaneous doses of metarsenobillon (0·001 to 0·004 g.) at intervals after a subcutaneous infection in a different part of the body (conditions more nearly approaching those of the puerperal cases) were unsuccessful.

These experiments, therefore, so far as they have gone, do not give any clear indication that arsenical treatment of the naturally occurring human disease many hours after its origin is likely to be very effective.

Discussion

Very few attempts have been made in the past to control a bacterial infection by a chemical agent which was known to increase the bactericidal power of the blood for the micro-organism concerned. The work here summarised, although not so successful as we should have liked, seems to be worth recording because it represents such an attempt.

Something has been gained by undertaking it. We started with the assumption that an increase in the capacity of the circulating blood to kill *S. pyogenes* would probably help to check the invasion of the genital tract tissues by that organism and terminate its dissemination through the blood stream. It now seems probable that in many cases neither of those things will happen. The invasion of the genital tract tissues by the streptococcus will not be checked by the bactericidal agent in the blood if the latter does not circulate freely through those tissues; and dissemination of the streptococci by the blood stream will be arrested only for a short time, if at all, when there exists a focus such as a septic clot in a large vein or a heavily infected peritoneal effusion into which the bactericidal agent cannot penetrate at all, or certainly not in effective concentration. The questions then arise: How often do these particularly unfavourable circumstances occur among the puerperal fever cases; and what prospect is there of being able to deal with them in future?

Let us consider first the possibility of an inadequate circulation through the infected pelvic tissues. We have called attention elsewhere [3] to the observations of Longridge in 1909 [4] on the extreme anæmia which normally characterises the involuting uterus. He referred to the organ in this condition as the "blood-tight uterus" and ascribed its anæmia to the extreme kinking of the uterine artery which has to occur to keep pace with the rapid shrinking of the musculature. He also gave reasons for supposing that the condition of anoxæmia so induced would necessarily lead to accumulation of acid products of metabolism (a local acidosis) and that this in turn would favour rapid autolysis of the tissues.

Our own observations in the post-mortem room go to confirm the bloodless condition of the body of the uterus, and we have brought forward evidence of an increasing acidity of the lochial exudate during the puerperium.

Further evidence will be sought by the injection of indicator dyes into recently delivered animals after the manner of Peyton Rous.[5] Meanwhile it seems legitimate to assume that there is a very deficient circulation through the body of the uterus during the puerperium; and as a corollary that this must adversely affect the chances of doing effective chemotherapy on the many cases whose puerperal infection is chiefly located about the placental site. In cases where the infection chiefly involves the very vascular damaged tissues round the cervix and vagina there is no reason to presuppose such a deficient blood-supply, and in these, chemotherapy might well have a much better chance of success. These cases, moreover, constitute an important group since they are particularly prone to develop peritonitis.

Up till now only two chemical agents have been found to be capable of increasing the bactericidal power of the blood for more than a few minutes—viz., the trivalent arsenicals now under consideration and Optochin (ethyl-hydrocuprein) with which Morgenroth and Levy in 1911 [6] were able to protect a certain number of mice against pneumococcus infection. We may legitimately expect that others will be found from time to time (not frequently) and that some of them may not be handicapped by the very slow bactericidal action which characterises both optochin and the arsenicals. The search for such agents should, we think, be the immediate objective in future chemotherapeutic work on streptococcal infections.

We come now to the problem of dissemination of streptococci through the blood stream and how this affects chemotherapy The cases in which this dissemination occurs may conveniently be divided into two groups, viz.:—

(*a*) Those which recover—30 to 40 per cent.—and in which we cannot say with any certainty what was the pathological condition responsible for the blood infection. Dissemination may have been by venous or lymphatic channels.

(*b*) Those which die—and in which the source of the blood-stream invasion can usually be ascertained at autopsy. They have either septic clots (and phlebitis) in one or more of the large pelvic veins—often extending right up to the vena cava and sometimes even within that vessel; or they have generalised peritonitis; or they have endocarditis. Only rarely do we fail to find one of these conditions.

In both groups the physiological mechanism for restraining the outgrowth of streptococci within the blood stream is usually very efficient—the number of colonies grown from 1 c.cm. of blood remaining very low from day to day and only rising sharply (in the fatal cases) within the last few hours of life. This fact—taken together with the circumstance that almost all the fatal cases present one of the specially unfavourable pathological conditions specified above—seems to show that the urgent need in dealing with septicæmia is not so much to assist the sterilisation of the circulating blood at any particular moment as to stop the constant liberation of streptococci (and their toxic products) into it from the associated local focus.

That is the crux of the problem of puerperal septicæmia. We cannot hope to stop the pullulation of streptococci in a breaking-down blood clot by means of an antibacterial agent in the circulating blood which has no access to the interior of the clot and usually not even to its exterior; nor can we hope that such agents will be able to overtake the gross outgrowth which occurs after a short time in the peritoneal exudate (although they might conceivably deal with such an infection in the early stages of peritonitis).

How far can surgery coöperate in these circumstances?

Our experience at the isolation block of Queen Charlotte's Hospital has shown that early drainage of the peritoneum in cases of peritonitis will sometimes turn the scale even when a blood infection is already present; and in the absence of such a blood infection it will frequently check the development of a spreading peritonitis.[7]

Thrombophlebitis of the pelvic and abdominal veins presents a still more difficult problem. If it should become possible to detect and locate the affected veins at a comparatively early stage surgical intervention (vein ligature and excision) might often prove successful, but up till now not much progress has been made in this direction.

From all that has been said it will be evident that we regard the outlook for the chemotherapy of these infections by *S. pyogenes* as somewhat unpromising; but against this rather gloomy view should be offset the fact that the majority of the patients so infected, given good nursing, do recover without any specific treatment. (The case-mortality for the mostly sporadic infections by *S. pyogenes* at the present time, when treated simply by lymph drainage and good nursing, is about 20–25 per cent. When the disease is epidemic the mortality is probably higher.)

We know very little at present of the physiological processes by which spontaneous recovery is effected in such cases. Possibly the fixed tissue cells play a larger part than we are accustomed to think? Until more is known of Nature's methods, we shall not be in a position to supplement her efforts with much hope of success. Meanwhile, it cannot be too strongly urged that the most effective way of diminishing deaths from these infections is by preventing their occurrence. And much greater effort should be directed to that end.

Summary

1. The results obtained in the treatment of 66 cases of puerperal infection by *Streptococcus pyogenes* with organic arsenical compounds (usually of the sulph-arsphenamine type) are analysed.

2. In the group of 29 cases in which, when treatment was commenced, the infection was limited to the tissues of the genital tract, the spread of the streptococcal invasion beyond those tissues occurred much less frequently (in 31 per cent. as compared with 47) than in a control group of approximately similar cases.

The difficulty of interpreting this apparent success is discussed. *S. pyogenes* did not disappear from the lochia during treatment by arsenicals. The arsenic content of the lochia in several cases following administration of arsenicals was usually very low, suggesting that the transudate from the blood-vessels into the infected tissues of the body of the uterus was too small to allow of any considerable destructive effect upon the streptococci in that situation.

3. In the group of 28 cases with a blood-stream infection (positive blood culture) in which peritonitis could be excluded, there were three cases in whom it appeared probable that the treatment had had a definite effect. The recovery-rate for the whole series, however, was only 40 per cent. as compared with 42 per cent for a control group of similar cases treated by various other methods. In most of the cases whose blood yielded more than one or two colonies per cubic centimetre before the arsenical was administered negative blood cultures were not obtained during the treatment. Autopsies on several of the treated cases indicated that the probable reason for failure was the presence of septic clots in large pelvic or abdominal veins into which a bactericidal agent could not be expected to penetrate.

4. In a group of 9 cases of general peritonitis (4 with a positive blood culture) there was no apparent effect of treatment by arsenicals.

5. The factors which contributed to failure in the human cases—and the prospects of greater success in the future—are discussed. In view of the special features which make the future of specific treatment appear unpromising, the great importance of preventing these infections is emphasised.

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HÆMOLYTIC STREPTOCOCCAL SEPTICÆMIA

TREATED BY A MODIFIED FORM OF IMMUNO-TRANSFUSION

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WITH A NOTE BY

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FROM time to time a case of acute streptococcal septicæmia is reported as recovering under some special line of treatment; but in further cases similar methods fail, thus leading to a suspicion that

the successful case was merely one of transient bacteriæmia, giving a positive blood culture. With the modified form of immuno-transfusion, described below, I have treated with success two consecutive cases of well-established hæmolytic streptococcal septicæmia, the second of which is recorded here. Outside the group occurring in the puerperium, spontaneous recovery from acute hæmolytic streptococcal septicæmia is rarely noted. The value of immuno-transfusion for septicæmia was assessed as follows by Dr. L. Colebrook, in the Metropolitan Asylum Board's annual report for 1927–28: "It has seldom been our experience that patients with streptococci in their blood stream before the transfusion have given a negative blood culture shortly after. It is doubtful whether immuno-transfusion alone has stayed the fatal progress of any established septicæmia." This opinion would probably be endorsed by all experienced in the use of such transfusions for severe hæmolytic streptococcal septicæmia.

Mrs. T., aged 41, on July 12th, 1933, suddenly developed a rigor and high temperature. At that date she regarded herself as in the best of health, and careful inquiry revealed nothing of moment except that a fortnight previously she had had a slight sore between the toes, of which she had taken scant notice. On July 14th she had a second rigor; on the 15th two rigors, with the temperature reaching 105° F.; and on the 16th another rigor. On the 17th the right knee became painful and tender; on the next day it was swollen; and on the 19th she was admitted to St. Mary's Hospital and the knee immediately opened and drained by Prof. C. A. Pannett, pus and hæmolytic streptococci being found. The blood culture was positive, each cubic centimetre of the 6 c.cm. of blood drawn showing a heavy growth of hæmolytic streptococci in 12 hours. It was hoped that the draining of the right knee might clear the blood of infection; but the septicæmia continued as was shown by the facts that there was no constitutional improvement nor satisfactory drop in the fever, and on July 22nd inflammation developed round the right elbow, and on the 24th pain developed in the right knee. On the 25th the right elbow was incised without finding pus; on the 26th and 27th the left knee was aspirated, yielding pus and hæmolytic streptococci; and on the 28th the joint had to be opened, yielding the same results. Until the special blood donors were ready, 20 c.cm. of antistreptococcal (hæmolytic) serum were given daily without any obvious effect.

Meanwhile a series of selected donors was being inoculated with a vaccine of streptococci from the patient's blood, and on July 26th the first transfusion (470 c.cm.) was given. On the 27th another of 290 c.cm. was given, and on the 28th a blood culture was taken and proved to be sterile. The patient's temperature fell only two degrees, but this was accompanied by marked constitutional improvement. On July 29th, following severe urticaria, the temperature rose suddenly to 105·5°, but in spite of this an immuno-transfusion of 500 c.cm. was given. A severe rigor ensued in a short time, after which the temperature fell 4°. Blood culture was negative on the 30th and again 48 hours later. The patient's condition showed marked improvement, though her temperature did not settle below 100°, nor the pulse-rate below 108. A high polymorphonuclear count was present, but no focus of pus was detected and it was thought that the opened joints were draining satisfactorily.

On August 4th the blood culture was still negative. On the 8th pus was found in the patellar pouch of the left knee and was evacuated. On the 16th a rigor occurred, and on the 18th a blood culture by Dr. I. H. Maclean showed numerous streptococci present. On the 22nd the right knee was reopened and some more pus evacuated. Blood culture was still positive, even 0·1 c.cm. of blood-giving growth showing at least ten streptococci per c.cm. present in the blood. Therefore an immuno-transfusion was given on the 25th and another (500 c.cm.) on the 31st. Subsequent blood culture was negative and remained so. Though the temperature had fallen to normal the pulse kept at about 100. This rate gradually lessened, and the patient except for two stiff knees was discharged well on Oct. 12th.

This case and a previous one of septicæmia similarly treated with success afford, I think, rather more ground for hope than the usual experience of immuno-transfusion in severe hæmolytic streptococcal septicæmia. In both cases where success was obtained the following details were observed—not, I think, previously insisted on.

1. From donors of the correct group individuals were selected by a more severe test of cross-grouping than previously thought adequate.

2. From donors so selected those showing apparently the most natural immunity to the patient's streptococcus were chosen. Those who gave the least reaction to doses of the patient's vaccine were assumed to possess the best natural immunity.

3. The blood drawn from the donor was kept at a temperature of 101·5° F., and injected at this temperature into the patient. Some experiments by Dr. F. Martley and myself on the bactericidal power of blood suggested this modification.

4. The patient was given sodium bicarbonate in considerable quantity for 12 hours before the transfusion.

5. The donor, having previously had four or five increasing doses of the patient's vaccine, was given an injection of nuclein four to eight hours before bleeding, and the presence of a leucocytosis was confirmed before drawing his blood. This nuclein injection of donors has been used before in these cases. It produces a leucocytosis which is useful; but with donors not specifically immunised I have failed with nuclein alone to get a definite result in severe streptococcal septicæmia, just as I have failed with donors who had had the specific vaccine alone. Doses of specific vaccine followed, just before bleeding, by an injection of nuclein constitute in my opinion the method of choice. The idea behind this procedure is that perhaps the non-specific stimulus of the nuclein in a specifically immunised donor causes an outpouring of the specific antibodies which are not fixed by the non-specific antigen: they are therefore available for the patient in greater quantity than would be the case if, instead of nuclein, the specific vaccine were again used just before the bleeding.

In such a case as that recorded here it is impossible to estimate the relative values of the details of transfusion technique described above, but the method used here is reported on the strength of its having been successful in two consecutive and severe examples of acute hæmolytic streptococcal septicæmia. I am inclined to think that, in using this method, it would probably be best to give a succession of immuno-transfusions—one every 24 hours—to consolidate the advantages gained from the first, and I should advise giving at least three transfusions in this manner, whether or no the blood culture is sterile after the first.

NOTE BY DR. MILLER

I have been asked to make a few comments on this case which was under my care. In the first place, the patient was a strong woman who had scarcely experienced any previous ill-health at all; this, although quite compatible with a poor resistance to an infection once acquired, was probably of value to her. I understand, however, that Dr. Dyson's previous successful case started with no such advantage. Secondly, the series of rigors with which the illness opened for some days before any focus of suppuration declared itself, marks the case as one of the most serious types of septicæmia; and the fact that after the first joint had been dealt with further foci immediately developed, shows the persistence and virulence of the blood-stream infection. That the trivial sore between the toes, present

a fortnight before the illness, was responsible was, of course, merely surmise; no other possible factor could be traced. The reinfection of the blood which occurred in the middle of August was probably secondary to the residual infection in the joints, and it was noticeable that, although the streptococcus showed in vitro great virulence, the patient's condition, even in her weakened state, did not give rise to the same anxiety clinically as that of the first weeks of illness. Thirdly, in my opinion the precise matching of the bloods carried out in this case accounted for the absence of serious reactions following the transfusions, and the smoothness with which blood transfusions can be given in routine ward work, where the matchings are carried out according to this method, confirms this view. In the present case one transfusion was given when the patient's temperature was over 105°; this sudden rise was taken to indicate a fresh invasion of the blood stream, and the transfusion was given owing to the critical condition of the patient. Finally, whether judged by the nature, type, and course of the disease as a whole, or by the variations exhibited from day to day, it seemed to me, so far as it is possible to reach a conclusion in such a matter, that the patient's recovery was due to the treatment organised and carried out by Dr. Dyson.

I express my thanks to Prof. Pannett and Mr. A. J. Cokkinis, who were in surgical charge, and to Dr. C. W. Morley and Mr. E. A. Butterworth, who assisted Dr. Dyson in the arduous work undertaken in connexion with the case. [R.M.]

HEREDITY AS A FACTOR IN THE ÆTIOLOGY OF DIABETES MELLITUS

BY P. J. CAMMIDGE, M.D. Lond., D.P.H.

THE remarkable improvement in our control of the symptoms of diabetes mellitus and its complications which has taken place during the last decade has tended to obscure the fact that, in spite of the many researches following the discovery of insulin which have resulted in a clearer understanding of the mechanism of the disease, its ultimate cause still remains unexplained. As long as this is the case the treatment must necessarily be symptomatic and compensatory, while any attempt at prevention or radical cure can only be carried out on empirical lines. There is now no doubt that the immediate origin of the hyperglycæmia and glycosuria characteristic of diabetes is an absolute, or relative, deficiency of the internal secretion of the pancreas, but why this deficiency should develop in some people and not in others has not been determined. My own experimental and clinical work has indicated that, as Naunyn suggested in 1906 ("Der Diabetes Mellitus," p. 37), the underlying factor which unites the different clinical forms of the disease is heredity, and that, given such an inherited tendency, any injury or disease throwing unusual strain on the mechanism of carbohydrate metabolism may act as an exciting cause and bring into prominence a hitherto hidden weakness. Convincing evidence in support of the hypothesis is not easy to obtain, owing partly to the imperfect knowledge possessed by many patients of the medical history of even their near relatives, and partly to the comparatively short time during which reliable clinical tests for glycosuria and hyperglycæmia have been generally employed. In the latter connexion it must be borne in mind that although the first copper reduction test for sugar, devised by Trommer, was published, after his death, by Mitscherlich in 1841 (Ann. d. Chem. u. Pharm., xxxix., 360), and three years later John Moore described his test in THE LANCET (Sept. 14th, 1844, p. 751), while Fehling's method appeared in 1848 (Arch. f. Physiol. Heilk., 1848, p. 64), it was not until the end of the nineteenth century that routine tests for sugar in urine became a common practice. Clinical processes for estimating the percentage of sugar in the blood are of still more recent origin and may be said to date from 1913, when Bang described the first practical method (Biochem. Zeits., 1913, lvii., 300). It consequently follows that, at best, definite proof of the existence of diabetes in a family can rarely be obtained for more than two or three generations, and that an apparently negative family history does not necessarily exclude the occurrence of glycosuria, particularly in remote ancestors or distant relatives.

In the course of time, with a general use of reliable methods of investigation and the awakening interest of the public in health matters, these difficulties will, no doubt, gradually disappear, and already there are indications that, as they diminish and the family histories of diabetics are more thoroughly investigated, evidence of heredity is being found with increasing frequency. Thus among the earlier writers, Frerichs stated that a family history of diabetes had been met with in 9·8 per cent. of his cases, Seegen gave a higher figure, 14 per cent., Naunyn found a still higher proportion, 17 per cent., while in Külz's cases it rose to 21·6 per cent. and in Williamson's to 22 per cent. In more recent times, Von Noorden, writing in 1917, reported heredity in 25·4 per cent. of his cases, Hoogslag, in 1922, stated that in his cases the proportion was 43 per cent., and Seckel, in 1925, found 26·4 per cent. Joslin's figures ("Treatment of Diabetes Mellitus," 1928, p. 143) are particularly interesting as they deal with large numbers and show an increase in the percentage with an hereditary history in successive series; in 1923 the proportion with an hereditary or familial history among 2800 cases was 21 per cent., in 1927 it had risen to 25·5 per cent. on a total of 2646 cases.

ANALYSIS OF 1000 CASES

My experience, although less extensive, has been similar, for in a series of 800 cases of diabetes published in 1928 (Brit. Med. Jour., 1928, ii., 738), 224, or 28 per cent., gave a history of glycosuria in blood relations, while in a series of 1000 cases, which I now propose to consider, 396, or 39·6 per cent., showed an ancestral or family history of diabetes, an increase of nearly 12 per cent. It is interesting to compare these findings with those given by a control group of 500 non-diabetics who gave a normal blood-sugar curve after a test-meal and most of whom were suffering from gastro-intestinal disorders; of these, 17, or 3·4 per cent., gave a family history of glycosuria.

In my 1928 paper I showed that a detailed comparison of the genealogies of many of the cases with those obtained by Howard and myself (Jour. of Genetics, 1926, xvi., 387) in our experimental breeding of hyperglycæmic mice indicated that the diabetic tendency might be transmitted either as a Mendelian recessive character, like mouse hyperglycæmia, or as a dominant character, like brachydactyly or night-blindness in human beings. A study of the present series on the same lines has shown that of the 396 cases in which a family history of diabetes was obtained, 197 (19·7 per cent.) were probably recessive, or familial, and 199 (19·9 per cent.) were probably

dominant, or direct. It is possible that the percentage of dominants may be a little too high, since, as I pointed out in the previous paper, cases with a short family history which appear to behave as dominants may prove to be recessive if a longer history becomes available; roughly, however, the two varieties seem to occur in approximately equal proportions in this series. Joslin in his 1923 series found 7 per cent. familial (recessive) to 18 per cent. hereditary (dominant), but in his 1927 series, the former had risen to 11·9 per cent. and the latter to 17 per cent., a nearer approximation to my findings. Of the 17 non-diabetics with a family history of glycosuria, 6 (1·2 per cent.) were apparently recessive and 11 (2·2 per cent.) dominant.

Considering the cases in decades, it is evident that, as in all similar series, the majority of the patients were elderly, 61 per cent. being aged 41 or more. Evidence of heredity was, however, most frequently found in the early years of life, probably partly owing to the fact that the patient's own knowledge of his ancestry could then be more readily supplemented by living members of previous generations; thus 70·2 per cent. of the cases in the first decade, 61·6 per cent. in the second, and 41 per cent. in the third, had blood relations who had been treated for glycosuria, while between 31 and 40 years of age the proportion giving a positive family history dropped to 32 per cent.; in subsequent decades there was a small but steady increase, which reached its maximum, of 40 per cent., in patients over 60 years of age (Table I.). The

TABLE I

One thousand cases of diabetes, classified in decades, showing the incidence of heredity and the proportions of Mendelian recessives and dominants at each age-period.

Age of onset in years.	Cases.	Diabetic heredity. Number and per cent.	Recessive.	Dominant.
0–10 ..	47 (4·7) ..	33 (70·2) ..	25 (53·2) ..	8 (17·0)
11–20 ..	65 (6·5) ..	40 (61·6) ..	26 (40·0) ..	14 (21·6)
21–30 ..	112 (11·2) ..	46 (41·0) ..	28 (25·0) ..	18 (16·0)
31–40 ..	166 (16·6) ..	53 (32·0) ..	29 (17·5) ..	24 (14·5)
41–50 ..	243 (24·3) ..	86 (35·5) ..	37 (15·3) ..	49 (20·2)
51–60 ..	230 (23·0) ..	83 (36·0) ..	31 (13·5) ..	52 (22·5)
Over 60 ..	137 (13·7) ..	55 (40·1) ..	21 (15·3) ..	34 (24·8)
Total	1000 —	396 (39·6)	197 (19·7)	199 (19·9)

number of cases with a family history of diabetes in the non-diabetics is too small to permit of any reliable conclusions being drawn, but, as far as they go, they do not indicate a similar distribution at successive age-periods and show a maximum incidence in the

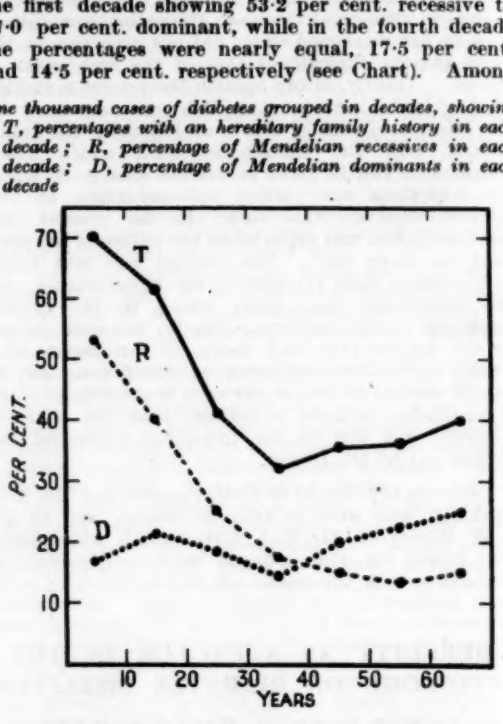
TABLE II

Five hundred non-diabetics, classified in decades, showing the incidence of hereditary glycosuria and the proportions of Mendelian recessives and dominants in each decade.

Age in years.	Cases.	Diabetic heredity. Number and per cent.	Recessive.	Dominant.
0–10 ..	45 (9·0) ..	1 (2·2) ..	1 (2·2) ..	0 (0·0)
11–20 ..	32 (6·4) ..	1 (3·1) ..	0 (0·0) ..	1 (3·1)
21–30 ..	65 (13·0) ..	5 (7·8) ..	0 (0·0) ..	5 (7·8)
31–40 ..	115 (23·0) ..	6 (5·2) ..	4 (3·5) ..	2 (1·7)
41–50 ..	77 (15·4) ..	1 (1·3) ..	0 (0·0) ..	1 (1·3)
51–60 ..	90 (18·0) ..	2 (2·2) ..	1 (1·1) ..	1 (1·1)
Over 60 ..	76 (15·2) ..	1 (1·3) ..	0 (0·0) ..	1 (1·3)
Total	500 —	17 (3·4)	6 (1·2)	11 (2·2)

third and fourth decades (Table II.). As in the series I published in 1928, the recessive form predominated in diabetic patients developing the disease under 40 years of age, whereas in later life it appeared to be most frequently transmitted as a dominant character, the proportions being 27·7 per cent. recessive to 16·4 per cent. dominant in the first four decades and 14·6 recessive to 22·1 per cent. dominant after 40 years of age. The difference in type seemed to be particularly pronounced at the extremes of life, the first decade showing 53·2 per cent. recessive to 17·0 per cent. dominant, while in the fourth decade the percentages were nearly equal, 17·5 per cent. and 14·5 per cent. respectively (see Chart). Among

One thousand cases of diabetes grouped in decades, showing T, percentages with an hereditary family history in each decade; R, percentage of Mendelian recessives in each decade; D, percentage of Mendelian dominants in each decade



the non-diabetics those having a recessive family history were distributed irregularly over the various decades, as might be expected, but those in which the tendency to glycosuria was apparently transmitted as a dominant character were found mainly in the second and third decades, 3·1 per cent. of the cases in the former and 7·8 per cent. of those in the latter having such a history, while in the following decade the proportion dropped to 1·7 per cent., and subsequently stood in the neighbourhood of 1 per cent. (Table II.). The sudden drop in the proportion of dominants shown by the non-diabetics after 40 years of age may be merely a coincidence, and with such small numbers it is difficult to be sure, but it is possible it may be connected with the rise of dominants occurring in diabetic cases after that age, for if, as my experiences suggests, defects of carbohydrate metabolism transmitted as a dominant character tend to develop in the later years of life, and particularly about 40, patients under that age with a dominant history would generally fall into the non-diabetic group, but with advancing years they would pass over into the diabetic group, thus increasing the proportion of dominants in the latter at the expense of the former.

COMMENTARY

Although the investigation of heredity in human beings is beset with many unavoidable difficulties, the evidence now available abundantly confirms the truth of Naunyn's dictum that the more carefully the family histories of diabetics are inquired into, the more frequently is evidence of heredity discovered. So far this is especially true of the younger generations, concerning whom extensive and reliable

information is most readily obtained, but it may also apply in the future to diabetics of mature years to a similar degree, with the result that an inherited tendency may prove to be an essential basis for the development of the disease in all, or nearly all, cases. At present we can only safely say that heredity is a factor in the ætiology which has to be reckoned with much more seriously than has been previously supposed. Seeing that the potentiality for developing diabetes may be transmitted either as a Mendelian recessive character or as a Mendelian dominant, it is necessary, if the part played by heredity is to be fully determined, that the investigation of the histories of diabetic patients should include all blood relations, that is to say, all persons related by blood, and not merely by marriage, as far as possible, and not be confined, as it often has been in the past, merely to immediate members of the family, for, as is well known, a recessive character may remain in abeyance for several generations and only be evident in collaterals. Differentiation of the recessive from the dominant type is of some clinical importance since, as I have previously pointed out, the dominant variety is almost invariably mild and is easily controlled by diet alone; it usually persists for many years, even in young people, without causing serious symptoms or materially affecting the general health; the recessive form, on the other hand, is generally grave from the onset and almost invariably requires the use of insulin to keep it under control.

MUCOCELE OF THE VERMIFORM APPENDIX

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THE following case of mucocele of the vermiform appendix is reported for three reasons: (1) the infrequency of the condition; (2) the enormous size of the specimen described; and (3) the presence of globoid bodies in the jelly-like contents. The lesion was discovered at the autopsy of a woman who suffered from lymphadenoma of the abdominal lymph glands.

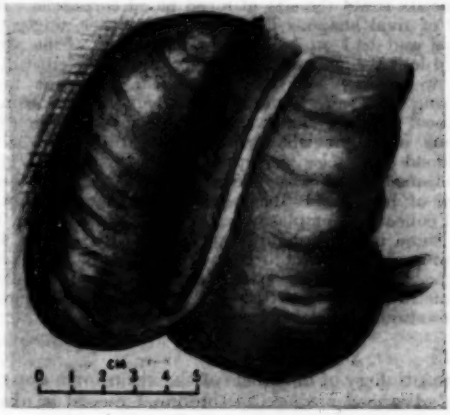
REPORT OF CASE

History.—The patient was a married woman aged 52. A mass in the right iliac fossa was discovered shortly after the birth of a child 12 years ago, and her doctor made the diagnosis of resolving appendicular abscess. Treatment with a view to surgical interference was refused because the mass had given rise to little or no inconvenience. The patient had been a healthy woman until eight weeks before admission to the Aberdeen Royal Infirmary. She then complained of pain in the right iliac fossa, epigastrium, and back, there being no relationship between the onset of pain and the taking of food. Occasionally she vomited, which gave slight relief to the pain. The vomitus consisted of partly digested food, but contained no blood. Her appetite was very poor, and her weight had declined rapidly. There was slight frequency of micturition, but no dysuria; the bowels acted regularly and there was no history of melæna. She had slight breathlessness occasionally and had become jaundiced recently. Examination of the urine was negative except for the presence of bile.

Examination.—The patient was fairly well developed, but with evidence of loss of weight. The mucous membranes were well coloured; she was jaundiced and edentulous. Her temperature was 99·8° F., her pulse-rate 106, her respiration-rate 28, and her blood pressure 116/72. Coarse and moist sounds were heard all over the chest. The abdomen moved well and equally on respiration. The lower half was somewhat distended, a tender, smooth, and slightly movable mass of about the size of a goose's egg being felt in the right iliac fossa. A hard, tender mass was also felt in the upper abdomen. The spleen and kidneys were not palpable. There was doubtful enlargement of the liver. The bladder was not distended.

Special investigations.—Blood: Wassermann reaction negative (twice). Red cells 3,880,000 per c.cm. White cells: 9600 per c.cm. Hæmoglobin 66 per cent. Icteric index 25. Van den Bergh reaction positive; direct and indirect reactions. A barium enema showed nothing abnormal.

Course of illness.—A diagnosis of malignant disease, probably lymphadenoma, within the abdomen was made.



The patient went rapidly downhill and died from bronchopneumonia.

AUTOPSY

Permission was given for an examination of the abdomen only.

A comma-shaped mass, about three inches in length, was seen projecting beneath the skin over the right iliac fossa. On palpation this mass was hard and slightly mobile in a lateral direction. On deep palpation an ill-defined mass was felt in the epigastrium. The peritoneal cavity contained a small quantity of clear bile-stained fluid.

On delivering the cæcum through the incision, a large sausage-shaped mass was found lying along its postero-lateral wall and adherent to it throughout its whole length (see Figure). No appendix was found in the usual situation, so the anterior longitudinal band was traced downwards along the front of the cæcum, where it diverged somewhat acutely to the right and became continuous with the base of the sausage-shaped mass. This and subsequent dissection proved clearly that one was dealing with an enormous cystic dilatation of the vermiform appendix. Aspiration failed to remove any of the contents, but stringy mucus escaped from the puncture immediately after withdrawal of the needle. The condition was therefore clearly a mucocele.

The mass in the upper abdomen was composed of enlarged lymphatic glands, which showed on microscopical examination the usual features of lymphadenoma. The spleen was about two and a half times the normal size and contained large lymphadenomatous deposits. The jaundice was the result of compression of the terminal portion of the common bile-duct by enlarged glands at the head of the pancreas. The uterus and adnexa were normal.

The mucocele.—The gross characters of the mucocele and its relationship to the cæcum are shown in the Figure. It measured 12·5 cm. in length, 12 cm. in circumference, and 5·75 cm. in width. The appendix from base to tip was uniformly distended and had lost all resemblance to that organ, being more like an overstuffed sausage. The colour was a dirty white. Firm compression failed

to expel any of the contents into the cæcum. No adhesions were present except between the lateral wall of the cæcum and colon and the mucocele. The cæcum was otherwise normal. The mucocele contained a large quantity of thick semi-translucent mucinous material which was so viscid that it failed to run out even when the incision was dependent. The inner surface showed several firm rounded transverse ridges which were most prominent on the postero-medial wall near the base of the appendix. Slight pouching was present between the ridges, indicating the positive pressure exerted by the contents. No trace was found of the orifice of the appendix, this having been obliterated completely by cicatricial tissue. The jelly-like mass gave the reactions of pseudomucin.

Microscopic examination.—Smears were made and examined. A remarkable feature of these was the presence of large numbers of opaque globular bodies, on an average five or six times the size of a red blood corpuscle. A few were of oval shape. They occurred either singly or in groups and had an affinity for hæmalum. Fine streaky colloid-looking strands and debris were plentiful, but cells were very scanty. No typical columnar mucus-secreting cells were found, the few cells present being for the most part of elongated shape with a single central nucleus and somewhat resembling fibroblasts. A few red blood corpuscles were present.

Sections of the wall showed this to be composed of layers of hyalinised fibrous tissue, between which were small collections of plasma cells and lymphocytes; there were some polymorphonuclears beneath the serous layer. The muscular layers and lymphoid tissue had completely disappeared. Sections stained with Sudan III. failed to demonstrate fat. No trace of a mucosa was found on examination of numerous sections.

ÆTIOLOGY

The ætiology of mucocele of the vermiform appendix of so advanced a stage as the one I record is obscure in view of the absence of an actively secreting mucosa, a finding which is more or less consistent with that of other extreme examples in the literature. This can be explained only on the grounds that the mucosa had degenerated and disappeared as the result of atrophy due to the long-continued pressure of the contents. It is possible also that the growth of a mucocele may continue only so long as a mucus-secreting layer of cells is present, after which further increase in size is no longer possible.

Elbe [1] has stated that a number of factors are essential for the development of a mucocele: (1) a gradual obliteration of the lumen of the appendix at one or more points; (2) the absence of gross infection; (3) a mucosa which is capable of active secretion of mucus, or a state of affairs in which absorption is less than secretion; (4) distension. The transformation of mucin into pseudomucin must also be included.

In the majority of cases the obliteration of the lumen is the result of chronic appendicitis and has usually been complete. This obliteration is common at the base of the appendix, as in my case. A similar result may also be a sequel of acute appendicitis, and Masson and Hamrick [2] have called attention recently to the relatively high incidence of mucoceles after simple drainage of an appendicular abscess. In one of their cases pseudomyxoma peritonei due to rupture of a mucocele was found nine months after drainage. Angulation or gradual torsion of the appendix by adhesion, followed by obstruction of the lumen, has been responsible for a few cases, such as the one described by Treves and Swallow.[3] Another factor suggested is closure of the valve of Gerlach as a result of habitual distension of the cæcum, but this is improbable. Carcinoma of the appendix followed by gradual obstruction of the lumen has very rarely been responsible for the development of a mucocele.

Mucocele is slightly more common in males than in females and most cases occur between the ages of 30 and 60. In a series of 13,158 autopsies Castle [4] found 28 cases or about 0·2 per cent. Dodge [5] collected 142 cases from the literature, and Milliken and Poindexter,[6] in 1925, increased the number to 168.

Large mucoceles are quite exceptional. Dodge states that in 51 cases the size of the cyst was small, up to 3 cm. in length; in 33 cases it was medium, 3½ to 9 cm.; and in 11 cases the size ranged from 9 cm. up. In 47 cases the size was not accurately recorded. Guttman's [7] specimen was 14 cm. long and 21 cm. in its greatest circumference; Kelly's [8] was 30 cm. long in its greatest curvature and 15 cm. in circumference. The greatest length of Wood's [9] specimen was 20 cm., with a diameter of 7 cm. Feré's [10] mucocele had a length of 10·5 cm. and a circumference of 9 cm.

PATHOLOGICAL ANATOMY

The whole appendix from base to tip may be involved, but in most recorded cases the mucocele has occupied only a part of the lumen; and it can develop at any point. The appendix shows evidence of antecedent disease, usually of the nature of a chronic inflammatory fibrosis which leads to a gradual obliteration of the lumen; but a mucocele may develop in a partly occluded appendix, as in five of Dodge's cases, and be due to variations in the degree of stenosis of the lumen. A decrease of the stenosis, such as might result from absorption of inflammatory œdema, leads to partial restoration of the patency of the appendix. The mucocele then empties itself, symptoms are relieved, and the mass, if formerly palpable, disappears. This is the intermittent form of mucocele, and is of importance clinically in view of the fact that a radiological diagnosis is possible. Adhesions are not so commonly associated with mucocele as might be expected from the chronicity of the condition. Diverticula are sometimes present. The larger types of mucoceles, in which the whole or almost the entire appendix is involved, are sausage- or banana-shaped. Typically the contents are semi-translucent and gelatinous, but there are two interesting variants: (1) the hydropic type, and (2) the globoid-body-containing mucocele. Both forms are very rare, the latter, according to Milliken and Poindexter, constituting 0·35 per cent. of the total number of recorded cases. The globoid bodies vary in size from microscopic structures, as in my own case, up to a diameter of 1 cm. In Shattock's [11] specimen of "fish-egg mucocele" the bodies resembled fish-roe both in size and appearance. Microscopically there is atrophy of the muscularis mucosæ and the main muscular coats and of the lymphoid tissue, followed by replacement fibrosis and round-celled infiltration. In advanced cases all trace of these structures may be lost. Dodge states that the muscular coat may show hypertrophy in the early stages. The condition of the mucosa in the reported cases is less clearly indicated but is usually one of atrophy.

SYMPTOMATOLOGY

The condition is usually discovered at operation or post-mortem examination. Milliken and Poindexter state that less than half of the reported cases had symptoms during life. Discomfort, pain, or a tender palpable mass may be present in the right iliac fossa. In the intermittent form of mucocele there is a history of severe attacks of abdominal pain, perhaps with nausea and vomiting, and sometimes associated with the presence of a tender mass in the appendicular region. Sudden disappearance of the mass, due to evacuation of the mucocele into the cæcum, may then follow and bring about a rapid relief of symptoms.

Successive exacerbations, more severe in character, during which an increase in the size of the mucocele is noticed, complete the picture.

This adds yet another to the long list of diseased conditions which are capable of giving rise to a palpable mass in the right iliac fossa; but a correct pre-operative diagnosis is not likely to be made except in the intermittent form, in which a typical history is present. Here radiology may be very useful in skilled hands, and Vorhaus [12] has correctly diagnosed one such case by this means. Unfortunately, however, success is improbable during the actual attack of the illness, as the mucocele is "closed" and the barium will not enter.

COMPLICATIONS AND PROGNOSIS

Carcinoma is so rare that it need only be mentioned as a possible complication. Infection or rupture of the mucocele are important complications, the latter frequently leading to pseudomyxoma peritonei. In this condition masses of jelly-like material (pseudomucin) are present in the peritoneal cavity and are either localised to the region of the appendix, or, less commonly, are diffusely distributed. The mode of origin of pseudomyxoma peritonei is problematical, the most favoured view being that the pseudomucin is the product of cells discharged from the ruptured mucocele which have engrafted themselves successfully on to the surface of the adjacent peritoneum, in a manner analogous to the more usual type of pseudomyxoma which may follow rupture of an ovarian cystadenoma. Another theory is that the rupture in the mucocele does not close up but continues to permit secretion to escape into the peritoneal cavity from the mucocele. It can scarcely be accepted that pseudomucin-formation is the result of irritation of the peritoneum by the escaped contents of a leaking mucocele. The occurrence of mucoceles in hernial sacs has been recorded.

Prognosis is unfavourable if either rupture or gross infection occurs, and in both events surgical interference is clearly indicated. The danger of rupture of a mucocele during its removal must not be overlooked, an error which might readily be made during the removal of the larger specimens which are adherent to the cæcum or other structures. Moreover, the possible development of a mucocele must be borne in mind in cases of chronic appendicitis or in appendicular abscesses which have been treated by simple drainage. In the latter, appendicectomy should not be too long delayed, as in a case I have referred to above a ruptured mucocele with pseudomyxoma of the peritoneum was found within nine months of appendicular drainage.

I wish to thank Prof. T. Shennan for permission to publish this case and Prof. L. S. P. Davidson for the use of the clinical notes.

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RHYTHMICAL ARTERIAL MUSCULAR CONTRACTIONS AND THE ELECTRO-CARDIOGRAM

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On previous occasions [1] I have endeavoured to set forth certain views, supported by what I consider to be circumstantial evidence, on the mechanism of the arterial circulation, especially during cardiac diastole, and its relationship to blood pressure. The central idea of my conception is that, owing to the sudden pressure on, and stretching of, the arterial wall as a result of the force of the ventricular injection, a myogenic contraction of the muscular coat results from the "stimulus" thus created.

I pointed out how the dicrotic notch in arterial sphygmomanometric and sphygmographic tracings could, in my opinion, be accounted for much more convincingly by such a contraction than by the conventional current and past text-book theories, and that in fact the dicrotic notch might be regarded as very strong evidence in favour of it.

During the time I was trying to elaborate my idea, from 1915 to 1927, I was practising in New Zealand and had no access to a physiological reference library, except contemporary standard text-books which contained no hint of any sort as to the possibility of an arterial contraction such as I have postulated. And I had the vain delusion that such a possibility had been overlooked. Since the publication of my papers in THE LANCET, however, I have learnt that Wilson [2] in 1918 suggested the possibility of arterial rhythmic peristalsis and its share in the production of the dicrotic notch in the sphygmographic tracing. But he apparently regarded such arterial contraction as the result of a stimulus via the sympathetic system, and does not elaborate his idea very fully, and it differs radically from mine.

Further, so far back as 1816, Caleb Hellier Parry,[3] and in 1819, Charles H. Parry,[4] described certain experiments on arteries, and dwelt on the possibilities of active arterial contractions as an aid to cardiac systole during diastole, and refer to similar ideas as having been conceived by continental physicians as far back as Galen. So all I may claim, possibly, to have done is to present an old idea in a new garment. But it is very gratifying for me to find that such an eminent worker as R. M. Wilson has found the conventional theory of the arterial condition during diastole as unsatisfactory as I did.

Having discovered that I could account for the dicrotic notch, in both volume and pressure tracings, on the basis of my theory, I turned my attention a short time ago to the electrocardiogram, being curious to find out whether it would afford any evidence for or against my contention. It seemed obvious to me that if such a contraction of arterial muscle really takes place synchronously in the systemic and pulmonary arteries, it should cause a rise in electric potential of sufficient amount to create a rhythmic wave on the electrocardiographic record. This wave might be negative for the pulmonary and positive for the systemic arteries, say with lead I. on normal tracings. If there be no such contraction, such a wave would be absent.

The position for this wave on the cardiogram would be at a point the same distance from the summit of the R wave as the top of the dicrotic wave

is from the summit of the systolic wave on a sphygmogram (about 2/10 sec.). This is precisely the situation or distance of the T wave. I think it will be conceded that even expert interpretations of the waves of the cardiogram have in the past proved, at least occasionally, to be based on incorrect hypotheses; and of all the waves on the normal tracing the T wave seems to have been the object of the most speculation and even now to be explained in the least satisfactory manner.

East and Bain in "Recent Advances in Cardiology"[5] state: "The end of the T wave coincides with the end of cardiac systole, and it is associated with the changes which take place in the ventricle during the phase of recovery from activity, which Lewis has called 'the stage of retreat.'" This seems to me to be analogous to the explanation of the dicrotic wave on the sphygmogram as being due to aortic reflux. It is too vague and unsatisfactory, although it is, I know, presumptuous of me to say so. I fail to understand how after a diminishing phase of, say, 0·2 sec. from maximum ventricular contraction (or from summit of R) another pronounced positive, or negative, electric disturbance should take place without additional muscular action in the ventricle, whereas an arterial contraction would easily explain it.

A study of abnormal cardiograms seems to me to support my view that the T wave is caused by arterial action and not by the heart. For example, on my supposition, in a normal case with lead I. we have two synchronous muscular currents set up during systole and diastole. The first two are caused by the left and right ventricles, and the remaining two by the systemic and pulmonary arteries respectively. In a normal circulation the currents caused by the left ventricle and systemic arteries are greater than the others, overpowering them as it were, and are positive. The current or rise in potential is greater because the muscular mass in action is greater and more forcible. It is fair to assume that the contractile response of a healthy artery to ventricular injection would be proportionate to the force of the latter; hence the higher the R the higher the T wave. With an impaired myocardium and arterial coat both waves would be lowered proportionately; or with extensive arterial disease T might even be inverted owing to the relative preponderance of the pulmonary negativity over the weakened systemic arterial potential. With left block only, the aortic side response being absent, so is the T wave, as well as the R. Or both may be inverted owing to the negative effect of the right ventricle and pulmonary artery; the effect will of course be proportionate to the impairment of function in both heart and arterial muscle or, in other words, to their electrical output.

In right block there would be no pulmonary arterial response, so T could not be inverted (with the same lead) and R and T might appear to be normal, or more probably R might be abnormal, depending on the muscular condition of the left ventricle. Complete block would tend to abolish all signs of T, as both pulmonary and systemic arteries would lack their stimulus to contraction; R would of course be absent. In aortic regurgitation, say, with extensive arterial (systemic) disease one would only expect feeble contractile response even to a hypertrophied left ventricle, and here T might be absent or inverted, especially if the pulmonary artery is healthy and contractile and giving rise to a higher electric output.

I have found that if I use this "key" to elucidate examples of cardiograms published in various works, in which the associated clinical and pathological conditions are described, the results are interesting and satisfactory, and seem, moreover, to confirm my opinion that the T wave is another link in the chain of evidence in favour of my original proposition.

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EFFECT OF A DINITROPHENOL ON TUMOUR METABOLISM

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4:6-dinitro-o-cresol, which produces in animals a large increase in the metabolism and a raising of the temperature,[1] has been shown to accelerate the respiration of thin slices of normal tissues.[2] The effect of this substance on surviving tumour tissue—that is, on tissue with a defective respiration,[3] or more exactly, a defective carbohydrate oxidation[4]—has since been tried. Measurements were made in the Haldane-Barcroft-Warburg apparatus, and thin slices of Jensen rat sarcoma were always used. Respiration of this tumour was increased by 10^{-5} Molar dinitro-o-cresol in the presence of glucose, lactate, and pyruvate, but not in the absence of added substrate. In glucose-containing phosphate medium the observed increases of respiration lay between 87 and 153 per cent. The respiratory quotient in lactate was slightly raised by the agent.

According to Barron[5] only tissues which show aerobic lactic acid production show an increased respiration in the presence of methylene-blue. Furthermore it has been found that when reversible dyestuffs increase the respiration of cells with an aerobic glucolysis the latter is simultaneously decreased.[6-8] Dinitro-o-cresol, however, acts differently from the reversible dyestuffs, for when the respiration of tumours was accelerated by it the aerobic glucolysis, instead of being decreased, was strongly increased. Measured manometrically, the observed increases in the aerobic acid production caused by 10^{-5} M. dinitro-o-cresol lay between 50 per cent. and 115 per cent. Chemical estimations by the method of Friedemann and Kendall[9] showed that the acid which appears is in all probability lactic acid. Confirmation is being sought by other methods.

It has been found that dinitrophenol administered to tumour-bearing rats produced evidences of "destructive cellular changes whose significance remains undetermined."[10] Whether this is connected with the increased acid production remains to be seen.

The increased glucolysis is all the more remarkable since the oxidising agent ferricyanide lowers the aerobic glucolysis of tumours,[10] and positive redox systems decrease the glycolysis of muscle extracts[11] and the fermentation of yeast maceration juice.[12] It should however be noted that dinitrophenol has just been found to produce a marked increase in

anaerobic lactate production by muscle and that the aerobic fermentation of yeast is "somewhat accelerated" by this agent.[13]

The phenomenon of simultaneously increased respiration and glucolysis is an entirely new and unexpected one. The nitrophenols are thus seen to be different in their action from all other agents hitherto applied in tissue metabolism studies.

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MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF THERAPEUTICS AND PHARMACOLOGY

Prof. J. H. BURN, the president, took the chair at a meeting of this section held on Feb. 13th, and Dr. C. KAUFMANN, of Berlin, read a paper entitled

Therapeutics with Hormones of the Ovary

Describing the physiology of the normal menstrual cycle he explained that in the first half of the cycle the mucosa of the endometrium underwent a proliferative phase through the agency of the follicular hormone œstrin; the hormone of the corpus luteum then acted on it to produce a secretory phase. Bleeding was only truly menstrual, he said, when it contained fragments of mucosa showing the changes typical of this secretory phase. Numerous follicles secreted œstrin before puberty; this activity controlled the growth of the uterus, and maintained the genital apparatus in a proper state of turgidity. When this "vegetative" function of the follicles was deficient, the whole genital apparatus remained immature. As this function began so long before puberty, it was obvious that treatment of its deficiency in adult women must be long and difficult.

Many observers had produced the sexual cycle experimentally in castrated animals but until recently none in castrated women. This discrepancy had led Dr. Kaufmann to make special investigations on human subjects. Calculations based on the amount of ovarian hormone in the urine had led workers to suppose that it was useless to give more than 600 mouse units, but experiments by Parkes and Zuckermann on the female baboon had suggested that the doses so far employed were not nearly large enough. In 1932 Dr. A. S. Parkes had prophesied with remarkable accuracy that the dose for women would be about 500,000 mouse units. Dr. Kaufmann, by giving one million international units of œstrin and 35 rabbit units of corpus luteum hormone to a castrated patient, had produced changes in the endometrium in every way comparable with the normal physiological cycle.[1] The whole problem was simply one of dosage. Too much œstrin produced cystic hyperplasia of the endometrium, but over 5 million international units were necessary; a million units should therefore no longer be called a large dose, but a physiological dose. Naturally occurring cystic hyperplasia was produced by failure of the follicle to rupture, so that œstrin production continued and no corpus luteum was formed. Fifty thousand international units corresponded with 1 mg. of dihydro-œstrin. For physiological proliferation, therefore, a daily dose of 1 mg. was necessary, and 26·7 mg. of crystalline dihydro-œstrin benzoate was needed to produce a single period.

[1] Zentralb. f. Gynäk., 1933, lvii., 42; see THE LANCET, 1933, i., 146.

THERAPEUTIC APPLICATIONS

The first five cases treated had been of marked primary hypoplasia of the genitalia, the uterus being hardly the size of a hazel-nut. Half a million international units had been given weekly in the form of 10 c.cm. of œstrin benzoate. In three women an astounding degree of uterine growth had been obtained. In one of these, 8,750,000 units had been given in six months with no perceptible result, but the dose had been raised to one million units weekly; in a short time the uterus had grown so much that it could not be distinguished from that of a normally menstruating woman. Slight brief hæmorrhages occurred, but only one true menstrual hæmorrhage was observed in all the cases. There were two failures: one could not be treated for longer than six months and the other showed no improvement after receiving 15 million units in seven months. No untoward results of any kind were observed in the experiments. Medicine would have gained very little, admitted Dr. Kaufmann, if the effect of the follicular hormone stopped at increasing the size of the uterus, but he hoped by its means to be able to stimulate the whole endocrine system. Psychic depression had been much improved in his patients.

In 40 cases of secondary amenorrhœa he had produced true periods artificially for three consecutive months by giving 250,000 units of œstrin every three days until five doses had been given, and then after a pause of three days giving 35 rabbit units of corpus luteum hormone over five consecutive days. Spontaneous menstruation might continue for a few months more. He had treated other cases with œstrin alone; a million units had produced hæmorrhage which was partly "interval" bleeding and partly true menstruation. Presumably the patient's ovaries were able to produce enough corpus luteum to complete the work. In two of the cases spontaneous menstruation had been re-established.

He did not, he said, recommend the indiscriminate use of large doses of œstrin in all forms of menopausal disturbance, as many patients would be kept symptom-free by smaller doses, but they produced remarkable effects in severe and intractable cases after castration. The dose should at first be 500,000 units weekly, being reduced after a fortnight to 100,000 units. Symptoms disappeared with astonishing rapidity. Œstrin was contra-indicated in irregular uterine hæmorrhage, which was nearly always due to cystic hyperplasia, but 50 cases had been treated with corpus luteum hormone with excellent results; 5 to 10 rabbit units spread over five days were usually enough. The great advantage of this treatment was that it often rendered surgical interference unnecessary. Another indication was kraurosis vulvæ.

POSSIBLE SOURCES OF ŒSTRIN

Mr. A. S. PARKES, D.Sc., acknowledged that Dr. Kaufmann's was the first work of its kind which made it quite clear that the woman could be brought into line with experimental mammals. Moreover, it showed that, although the action of œstrin itself might not be dramatic in woman, it nevertheless played a very definite rôle in the maintenance of the uterine cycle and was necessary before the hormone of the corpus luteum could perform its functions. He explained that two years ago, when the Medical Research Council had endeavoured to organise clinical trials with œstrus-producing hormone, the trihydroxy-œstrin had been the only substance available, but the ketohydroxy-œstrin was about twice as potent. Ten million international units went to the gramme, and corresponded to about 0·2 g. of trihydroxy-œstrin, about 40 ampoules being therefore required to give one million units. It appeared as though an attempt would have to be made to manufacture more keto-hydroxy-œstrin, or one of the more active synthetic combinations. Whereas œstrin was readily procurable from the urine of stallions, progestin or the corpus luteum hormone was so far only known to be obtainable from the corpus luteum itself and the supply was still very limited. Dr. Kaufmann's work had shown that the dosage of both hormones rested on a strict weight-to-weight basis, but that of other sex hormones, such as the secretion of the anterior lobe of the pituitary, could not be even roughly compared with the weight, although a relationship would almost certainly be established as a result of research.

Prof. E. C. DODDS explained the chemical construction of ketohydroxy-œstrin and said that by a clever process of hydrogenation Prof. Schoeller and his assistant had succeeded in producing a compound four times as active as the original ketohydroxy-œstrin, thereby making Dr. Kaufmann's experiments possible. By fully hydrogenating one of the rings a compound was produced which assumed the properties of the male sex hormones; this fact was probably connected with the presence of œstrin in stallions' urine.

Dr. H. GARDINER-HILL reported results with Dr. Kaufmann's preparations at St. Thomas's Hospital. In several cases of secondary amenorrhœa, hæmorrhage had appeared and lasted for four days, but in no case had the cycle been reproduced.

Mr. ALECK BOURNE reported negative results in six attempts to induce labour with œstrin, sometimes in combination with pituitary extract. It appeared that œstrin did not sensitise the human uterus near term, even in large doses, and would not serve for the induction of labour. One of the practical difficulties about its use was that it took several days to act, and often labour had to be induced fairly quickly on account of toxæmia.

Dr. CAROLINE MAULE asked whether Dr. Kaufmann had noticed any symptoms such as those which often preceded menstruation in the ordinary woman: tenderness or pain in the breasts or palpable lymphatics.—Dr. KAUFMANN replied that he had seen such manifestations 24 hours after each injection in a small number of cases.

LIVERPOOL MEDICAL INSTITUTION

AT a meeting of this institution on Feb. 8th with Dr. J. MURRAY BLIGH, the president, in the chair, reports were given on the use of

Radium in the Treatment of Cancer

Mr. G. C. E. SIMPSON, who spoke on the cases of cancer of the *breast* treated under the auspices of the Liverpool Radium Committee in the last four years, drew the conclusion that radium treatment should entirely displace partial operation in the advanced cases and should be used as an adjuvant to operation in the early or medium case. He hoped that in course of time a technique would be evolved which would lead to discontinuance of radical operation. Meanwhile the enormous death-rate from breast cancer could be reduced only when the 80 per cent. of patients who came to the surgeon with the disease in an advanced state were persuaded to present themselves earlier.

Mr. F. STRONG HEANEY gave an interim report on 90 consecutive cases of cancer of the mouth treated by him at the Liverpool Radium Institute since 1930. They were grouped according to the stage of the disease and the part affected (stage I, limited primary, no glands; stage II, limited primary, mobile glands; stage III, extensive primary, and/or fixed glands).

The number of *lip* cases was small, since excision of the primary was still considered the method of choice. Radium was used where operation would mean a wide excision and complicated reconstruction. In all which could be traced, the primary had healed. In the *tongue and mouth* cases there was healing of the primary by radium in 100 per cent. of all cases treated in stages I and II, and 65 per cent. of those in stage III. Treatment of the glands in all cases in stage II and in some of stage I cases was by block-dissection. Sometimes this was followed by irradiation by radium pack. The glands in stage III were treated with radium—sometimes interstitial, usually superficial, pushed to the production of vesication. The survival rate in tongue and mouth cases for all stages of the disease was: 1st year, 50 per cent.; 2nd year, 34 per cent.; 3rd year, 25 per cent. In *fauces* cases, the treatment of the primary at present consisted in application of needles interstitially. Better access was sometimes obtained by slitting the cheek and at once joining skin and mucosa. The number treated was not enough to work out survival percentages.

Mr. P. MALPAS reported on a continuous series of 373 cases of carcinoma of the *cervix* referred for treatment from July 1929 onwards. In 8 the disease was too advanced for even palliative treatment. In the remaining 365 radium therapy was employed as the primary method of treatment, although the series contained 11 cases in which a hysterectomy, either local or extended, had been performed elsewhere. According to the League of Nations classification, 30 cases, or 8 per cent., belonged to stage I (the operable group); 105, or 26 per cent., to stage II (the doubtfully operable group); 142, or 39 per cent., to stage III (the advanced group), and 96, or 26 per cent., to stage IV (the hopeless group). The high proportion of cases in the later stages of the disease was not due to delay by practitioners in referring their cases, but to the patients' neglect of trivial hæmorrhages or to the fact that the lesion sometimes caused no symptoms until well advanced.

The Stockholm technique was adopted without any substantial variations, and most of the cases received continuation deep X ray therapy afterwards. Both Dr. P. H. Whitaker, who gave this treatment, and the speaker considered this a necessary adjunct. Sixteen deaths occurred immediately or within one month of completing treatment; of these 14 were in the stage IV group, and the other 2 in the stage III group. The total operative mortality was thus 4 per cent., but the mortality in the earlier cases was nil. Including all cases referred, and observing Winter's criteria, the interim results were as follows (all untraced patients being reckoned dead): Surviving

one year or more after treatment, 56 per cent.; 2 years or more, 39 per cent.; 3 years or more, 36 per cent.; 4 years or more, 30 per cent. The corresponding survival rates for the cases classified according to the stage of the disease were as follows:

Surviving.	Stage I	II	III	IV
1 year or more	83	83	56	22
2 years or more	78	61	36	7
3 ,, ,,	73	61	34	0
4 ,, ,,	100*	50	20	0

* 2 cases.

While there were a few disappointments in the early cases, the results seemed satisfactory, certainly in cases falling into stages I and II. As a rule complete healing of the primary lesion was obtained, but treatment failed to prolong the life of any of the advanced cases in stage IV for more than two years.

Mr. M. J. BENNETT-JONES said he had tried to compare the results of the different methods used for carcinoma of the breast by Mr. H. F. Woolfenden. Interstitial radium alone was used in a small series of advanced and otherwise inoperable cases. A third of these had lived for nearly two years without evidence of recurrence; the rest had nearly all died of widespread metastases, but had usually obtained relief until a very short time before death. Radical mastectomy followed by radium insertion was the treatment applied to a consecutive series of 18 operable cases (61 per cent. had microscopic evidence of metastasis). Seven of these had lived for nearly two years without signs of recurrence. The remaining 11 were all dead and yet there was only one local recurrence, in a case of adenocarcinoma. If radical mastectomy followed by radium offered a better ultimate survival-rate than surgery alone, all the living cases must live for another three years; for there was a 34 per cent. 5-year survival-rate from 50 radical mastectomies performed by Mr. Woolfenden before 1928 (40 per cent. of these had microscopic evidence of metastasis).

Dr. E. CRONIN LOWE spoke of the evidence that cytolysis of cancer tissue in situ was associated with some form of immunising response in the patient. By means of a serum test he had followed the blood changes in a series of gynæcological cases treated with radium and his observations suggested definitely that serological alterations towards normality followed successful treatment. In several cases a later deflection of the serum test findings to a more "positive" result had preceded clinical evidence of recurrence or metastasis. Such tests might, he thought, provide means of differentiating cases which would respond to treatment from those which would not; the degree of malignancy and the tendency to recurrence or metastasis might depend more upon the tissue resistance of the patient as shown by a blood test, than upon the site or size of the tumour.

Mr. J. T. MORRISON said that in the present state of knowledge he did not think it justifiable in cases of cancer of the breast to neglect the possibilities of cure held out by operation. Consequently he had treated only strictly inoperable cases with radium, and he did not believe that any of these had any hope of survival. He was convinced, however, that much good was done by dealing with the local lesion by radium; in only one case had he seen any local recurrence. Mr. Morrison deprecated the idea that radium treatment was devoid of risk. In old people in particular local operation under local anæsthesia was to be preferred whenever possible. In old age there seemed to be a great risk of death from a low form of toxæmia coupled with hypostatic congestion during and after radium treatment.

Mr. H. V. FORSTER said that laryngologists would agree that the treatment of cases of cancer in the tonsil area had been disappointing. This was a difficult region for radium treatment.

Gold Salts in Rheumatoid Arthritis

Dr. JACQUES FORESTIER (Aix-les-Bains) read a short paper on the use of gold in rheumatoid arthritis, which he regarded as an infectious disease. Summing up his results in about 500 cases followed over periods of 2–5 years, he said that in early cases (under two years' duration) 50 per cent. were completely cured, the remainder being greatly improved. In cases of longer standing, 80 per cent. were improved and 20 to 30 per cent. cured. He maintained that the method seemed to offer better results than any other at present known, and in conclusion described its association with the various forms of physical therapy and spa treatment.

In the discussion which followed, Dr. H. S. PEMBERTON said that his experience confirmed that of Dr. Forestier. In a series of some 60 cases of chronic arthritis, a few treated with Allochrysine but the majority with Crisalbine, he had got very definite improvement in about 70 per cent. and what appeared to be a cure in about 10 per cent. Of all the specific therapeutic agents he had tried, gold salts were the most successful.

VARIOLA MINOR.—The opening sentence of Sir George Buchanan's remarks at the Medical Society of London (THE LANCET, Feb. 17th, p. 352) should read: "... a large chart showing the incidence of variola *minor* in the British Isles ..."

OSTEITIS FIBROSA.—In last week's account of the joint meeting of the sections of surgery and orthopædics of the Royal Society of Medicine on Feb. 6th, Mr. Hermon Taylor is reported as saying, in a description of his experiments on hyperparathyroidism, that "the increased excretion of phosphorus was a direct result of the increased excretion of calcium." He informs us that his actual statement was that the increased excretion of calcium produced by parathormone (in non-toxic amounts) is secondary to the increased excretion of phosphate in the urine. Our report goes on: "The rise in the phosphatase of the blood was evidence of the increased laying-down of calcium, phosphatase being essential to the conversion of ionised non-organic calcium into the non-ionised organic form." The second half of this sentence is also based on a misunderstanding of Mr. Taylor's observations. He pointed out that phosphatase (in the bones) converts non-ionised organic phosphate into ionised inorganic phosphate. The local excess of phosphate ions thus liberated causes the precipitation of calcium in the bones as calcium phosphate.

MARIE CURIE HOSPITAL

A SPECIAL meeting was organised on Feb. 15th by the medical committee of the Marie Curie Hospital, with Dr. ELIZABETH HURDON in the chair, to hear a lecture by Dr. HENRI COUTARD, of the Fondation Curie, University of Paris, on the

Principles of X Ray Treatment of Malignant Disease

Dr. Coutard, whose lecture was illustrated by lantern slides, said that the results of radiation therapy of cancer proved definitely that certain cases could be cured. He showed his figures for the years 1921–26. Of 45 cases of lymphosarcoma of the mouth and tongue, 17 per cent. had been alive both after five years and after seven years. Of 46

cases of epithelioma of the tonsil and soft palate 28 per cent. had been alive after five years and 17 per cent. after seven years. Of 77 cases of epithelioma of the larynx 28 per cent. had been alive after five years and 27 after seven years. He pointed out that the percentages were not the same every year; 1925, for instance, had been a bad year for epithelioma of the tonsil and soft palate and 1922 had been a bad year for the larynx.

TECHNIQUE

Passing to his technique, Dr. Coutard said that he used a voltage of 180–200 KV, a filter of 2 mm. Zn, 3 mm. Al, 1 cm. wood; a milliamperage of 4 and a distance of 50 to 60 cm. He used constant potential machines and the dose was measured in "*r*." For radio-sensitive tumours the depth dose measured from 3500–4000 *r* and for radio-resistant tumours from 4000–5000 *r* or even more. The results were exactly measured by the biological consequences: radio-epithelitis of the mucous membrane and radio-epidermatitis of the skin.

Radio-epithelitis involved complete destruction of the germinal layers of the mucous membrane and the production of a false membrane. Destruction was complete 13 or 14 days after the first dose, and the lesion healed on the twenty-sixth day.

Radio-epidermatitis involved loss of the epithelial layers and denudation of the dermis. It appeared 26 to 28 days after the first dose and healed 15 days later, leaving no trace. To get the reactions in this form involved a total surface dose of 4500 to 5000 *r* on the skin and nearly 3500 on the mucosa, spread over 14 days in two daily sessions of one hour on the same lateral surface of the neck. If the treatment were given in a shorter time, for example ten days, the reaction of the mucous membrane overlapped that of the skin; both reactions appeared later and lasted longer, and the connective tissue might be involved. If the dose were given over a longer period—e.g., 18 days—both reactions were small and appeared later. There should be no scar on the skin and repair should be completed in two weeks. The edge of the denuded area should be irregular, showing islands of epithelial cells establishing repair. If the islands did not appear the result was likely to be bad. It was always dangerous to allow total destruction of the layers over a large field.

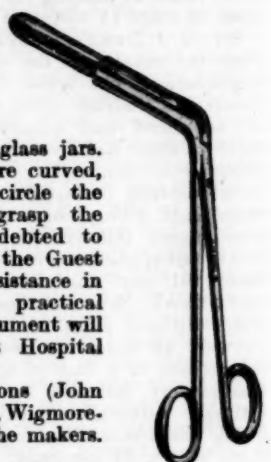
GENERAL PRINCIPLES

The radiologist required to know two things: the useful quantity of energy, and the duration and best conditions for the distribution of energy. There was an optimum dose for each variety of cancer; beyond a certain dose the results did not improve but rather got worse. The duration averaged 20 to 30 days, but Dr. Coutard and his colleagues had studied the problem by varying the duration from 30 to 90 days and keeping the other factors constant. Their conclusion was that quantity was the important factor for radio-sensitive, undifferentiated, or little-differentiated growths, like lymphosarcoma. The duration was less important for this type of neoplasm. The ideal duration was not known; it was one that would preserve the normal tissues. For a radio-resistant growth such as gland epithelioma or tubular adenocarcinoma, the duration was more important than the quantity, and the results would be bad if the dose were given in less than thirty days and good if a daily small dose of about 200 to 300 *r* were given over 40 or 60 days. In addition to good local results, metastases were few with this technique. The period might be even longer, up to 70 days, for instance, for breast carcinoma. In this type of tumour it was important to conserve the connective tissue with great care.

It was essential to remember that the cure of cancer by X rays was possible but very difficult, and was still dangerous. There was a very small margin between the dose which would kill the tumour and the dose which would provoke injury. A daily examination of the patient was necessary; modifications of the normal tissues might appear so quickly that the daily dose might have to be reduced in the course of treatment.

NEW INVENTIONS

CATGUT TUBE FORCEPS



THESE forceps have been designed for lifting cylindrical glass tubes containing catgut. The catgut tubes, submerged in antiseptic fluid, stand vertically in glass jars. The jaws of the forceps are curved, so that they partly encircle the catgut tube and thus grasp the tube securely. I am indebted to members of the staff of the Guest Hospital, Dudley, for assistance in bringing my idea to a practical conclusion, and the instrument will be known as the Guest Hospital catgut tube forceps.

Messrs. Arnold and Sons (John Bell and Croyden), 50–52, Wigmore-street, London, W.1, are the makers.

JOHN W. STRETTON, F.R.C.S. Eng.

A CERVICAL IRRIGATOR

THE cervical irrigator here illustrated has been made to my design and is used at the L.C.C. Whitechapel Clinic, where it has proved very successful in the daily routine treatment of gonorrhœa and other cervical infections. The instrument is 10 in. long, with a gentle curve to facilitate its introduction into the cervical canal. The gauge along the shaft is that of No. 8 English catheter. It terminates in a small bulbous protrusion, which is perforated both terminally and on all sides with the gauge of a No. 2 English catheter. This type of construction causes a backflow, which thoroughly douches the vagina.

The instrument is made of stainless metal and in one piece to permit easy sterilisation.

Messrs. Arnold and Sons, of Wigmore-street, London, are the manufacturers.

W. NEVILLE MASCALL,
M.R.C.S. Eng., L.R.C.P. Lond.

London, E.

COVENTRY HOSPITAL SATURDAY FUND.—The Coventry and Warwickshire Hospital has received £25,564 as the result of last year's activities of the Hospital Saturday Fund. This sum exceeds by £4000 any previous result, and brings up the total raised by the Fund during the 60 years of its existence to £397,000.

REVIEWS AND NOTICES OF BOOKS

1. Pathogenic Microörganisms

A Practical Manual for Students, Physicians, and Health Officers. Tenth edition. By WILLIAM HALLOCK PARK, M.D., Professor of Bacteriology and Hygiene, University and Bellevue Hospital Medical College, and Director of the Bureau of Laboratories of the Department of Health, New York City; and ANNA WESSELS WILLIAMS, M.D., Assistant Director of the Bureau. London: Baillière, Tindall and Cox. 1933. Pp. 867. 35*s*.

2. Introduction to Laboratory Technique in Bacteriology

Revised edition. By MAX LEVINE, Ph.D., Professor of Sanitary and Technical Bacteriology, Iowa State College. London: Macmillan and Co., Ltd. 1933. Pp. 289. 8*s*.

3. Bacteriology and Sanitary Science

Second edition. By LOUIS GERSHENFELD, Ph.M., B.Sc., P.D., Professor of Bacteriology and Hygiene, and Director of the Bacteriological and Clinical Chemistry Laboratories in the Philadelphia College of Pharmacy and Science. London: Henry Kimpton. 1934. Pp. 493. 21*s*.

1. Bacteriology is fortunate in having a number of good text-books, each with its own individuality. Most students of bacteriology who have passed beyond the elementary stage know and value "Park and Williams," and there is no need at this stage of its career to stress its merits. For the benefit of those commencing the serious study of the pathogenic micro-organisms, however, its value as a work of reference should be re-stated. The book makes a special appeal to those interested in the hygienic aspects of bacteriology since it incorporates much of the rich personal experience of Dr. W. H. Park and his colleagues of the Bureau of Laboratories, New York, a team which has probably had an unrivalled experience in the practical applications of bacteriology and protozoology to the diagnosis, treatment, and prevention of infectious disease. Those who have been making use of earlier editions would be well advised to inspect this new and much improved version with a view to replacement.

2. This is a laboratory course in practical bacteriology adapted to the needs of students of general bacteriology. It gives relatively little attention to pathological bacteriology. Each day's work is carefully mapped out, the materials needed are indicated, and the exercise is carefully described. While one can find little fault with the detailed instructions, many teachers would consider that a book of this type goes too far in relieving the teacher from his proper task of preparing his individual lessons and the student from the obligation of arranging his own notebooks.

3. The title of this book is apparently meant to convey not that it is a text-book of bacteriology applied to sanitary science but rather that it is a manual of sanitary science with special reference to bacteriology. It is written for students of pharmacy, chemistry, and allied sciences and contains a good deal of information which is not readily found in ordinary text-books. Its scope involves rather unequal treatment of the different branches of sanitary science, but certain parts are very well presented, such as the elements of bacteriological technique, disinfection, and fumigation. A number of minor errors, both of omission and commission, should not have been allowed to survive in a second edition, but as a whole the book is skilfully adapted to the needs of pharmaceutical students and may be recommended to them as an introduction to a subject which sooner or later must take a place in their curriculum.

Clinical Notes on Disorders of Childhood

By D. W. WINNICOTT, M.A., M.R.C.P., Physician, Paddington Green Children's Hospital; Assistant Physician, the Queen's Hospital for Children. London: Wm. Heinemann Ltd. Pp. 216. 10*s*. 6*d*.

A READING of this number of the Practitioner's Aid Series some time after its publication incites a desire to draw attention to its sincerity, its content, and its form. The author has forsaken the common plan of describing disease-pictures as they are familiarly displayed in systematic text-books, to persuade his readers that a proper understanding of the common disorders of childhood is best obtained by practitioners of medicine who pay regard to the psychological influences which beset a child, as well as to its physical diseases. The sincerity of the book lies in the author's individual approach to problems which are described as he himself has seen and studied them.

In its content the book may be criticised as having a psychological bias, but this is surely better than text-books in which no heed is given to psychological factors in disease, and it maintains balance for it "proceeds from the heart of a clinician." After a valuable introduction and interesting chapters on history taking and physical examination—about which it is difficult to write anything new that is interesting—Dr. Winnicott proceeds to discuss those disorders common in practice yet hard to define on a basis of pathological anatomy—feverish attacks, growing pains, fidgetiness, rheumatism, anxiety states, and so on. The book must be judged not as a comprehensive guide to examination-hall diseases, but as an attempt to show practitioners of medicine how they may study and recognise these disorders, and in this it cannot fail to find a response if it be carefully read. It has set upon it that seal of good writing which appears to come more easily to those who interest themselves in psychology than to other medical writers.

La cholécystectomie sans drainage

By P. L. MIRIZZI, Professeur titulaire de Clinique chirurgicale à la Faculté de médecine de Cordoba (Argentine). Paris: Masson et Cie. 1933. Pp. 106. Fr.28.

THE author of this book is a strong advocate of cholecystectomy without drainage, as he believes that a number of post-operative troubles may be attributed to the use of a drainage-tube. However this may be, there is no doubt that in selected cases, with a very careful technique, convalescence from this "ideal" cholecystectomy is particularly smooth. Prof. Mirizzi records a series of 100 consecutive cases, in 69 of which he was able to perform an ideal cholecystectomy. He advocates it only in cases where the biliary path is proved to be free of obstruction by a radiological examination on the operating table at the actual surgical intervention, after injection of lipiodol down the cystic duct. This process necessitates a prolonged anæsthesia since two photographs are required at an interval of 15 minutes; many beautiful reproductions of such radiograms are presented. A very precise operative technique is followed in cases where primary closure is carried out. There was but one death in the series of 69 cases. This book is worth study by surgeons, for it is quite

possible that primary closure could be used with advantage much more often than is customary in this country.

Cancer du colon droit

By JEAN GOSSET. Paris: Masson et Cie. 1933. Pp. 326. Fr.50.

THIS is an excellent monograph based upon 50 cases of carcinoma of the right half of the colon, in 26 of which excision was carried out. The symptoms and diagnosis of the disease are well described, but we should have wished to have had a more detailed description of the use of Umbrathor and the insufflationary method of radiodiagnosis which promises to be more exact and reliable than the ordinary barium enema. The author is a strong supporter of the two-stage operation for the right as well as the left half of the colon, unilateral exclusion first, followed by excision two or three weeks later. This will receive general acceptance. He also lays emphasis on drainage of the retroperitoneal space, a precaution not always taken. The book is excellently printed and illustrated.

The Operative Story of Cleft Palate

By GEORGE MORRIS DORRANCE, M.D., F.A.C.S., Professor of Maxillo-facial Surgery, the Thomas W. Evans Museum and Dental Institute School of Dentistry, University of Pennsylvania. Assisted by ENAYAT SHIRAZY. London and Philadelphia: W. B. Saunders Co., Ltd. 1933. Pp. 564. 32s. 6d.

Prof. Dorrance has provided an excellent résumé of the literature of cleft palate surgery from 1817 to the present day. He reviews many hundreds of papers in a critical manner, gives the salient points of each, and lays due emphasis on every original contribution to our knowledge. Prof. Dorrance stresses the importance of the palato-pharyngeal sphincter and states that a portion of the superior constrictor muscle is inserted into the soft palate, which materially assists the closure of the nasopharynx during speech. This sphincter is incomplete anteriorly when the velum is split. The attempt to overcome a faulty sphincter by the production of stenosis of the nasopharynx at the level of the palatopharyngeal fold is deprecated. Amongst the authors falling under this ban are Lexer, who injected paraffin into the retropharynx; Rutenberg, whose operation consisted of making a transverse incision in the posterior pharyngeal wall and suturing it longitudinally, and which has been repeated by Wardell; and lastly, Botey, who excised an oval portion of the posterior pharyngeal wall and hoped for cicatricial formation to narrow the nasopharynx.

The last chapter but one is devoted to Prof. Dorrance's own solution of the problem presented. He describes and advocates a "push-back" two-stage operation for clefts of the soft palate. In our experience the cleft soft palate is one of the easier deformities to close, and we regret that more space was not devoted to extensive clefts of the hard palate and of the alveolar arches. The operation advocated for cleft hard palate is a two-stage procedure, strongly resembling that described by D. Browne; but Browne's name is only mentioned in the bibliography, which, although extensive, is not quite complete.

The book is profusely illustrated. Some of these illustrations are not very clear and could with advantage be replaced by line drawings. Justice, however, is not done to Victor Veau's excellent diagrams, and the few reproduced do not demonstrate the principles of Veau's operation. But many of the pictures are good. This treatise should certainly be read by all interested in cleft palate surgery.

Les traumatismes fermes du rachis

By G. MICHEL, Professeur de clinique chirurgicale; M. MUTEL, Professeur agrégé; and R. ROUSSEAUX, Chirurgien des Hôpitaux. Paris: Masson et Cie. 1933. Pp. 323. Fr.50.

IN this book the authors, who occupy positions in the Nancy faculty of medicine, have been at pains not so much to introduce any original work as to bring the whole subject of injuries to the spine together with their complications up to date in a comparatively short space. The work is well illustrated not only by excellent X ray photographs but particularly by numbers of the well-chosen, clear diagrams characteristic of French writers. These latter are so illuminating that one ignorant of the French language could glean a lot of information from them alone.

The first part of the book is allocated to spinal concussion, hæmatomyelia, the signs of complete and incomplete section of the cord, and the sympathetic complications of cord lesions. The authors lay great emphasis on the fact that cord lesions can exist, appearing early or long after an injury to the back, even without any evidence of a fractured vertebra. The rest of the work is devoted to description of the varieties and mechanism of fractures of the vertebræ at different levels, together with an account of the cord lesion at each level. In regard to treatment, conservative methods are of course favoured, any violent manipulative process being deprecated; but the value of Böhler's ambulatory method of treatment hardly gets sufficient acknowledgment. On the whole this is an excellent book, which students working for higher examinations should find extremely useful.

Organic Chemistry

By F. SHERWOOD TAYLOR, Ph.D., M.A., B.Sc., Assistant Master at Repton School. London: William Heinemann Ltd. 1933. Pp. 587. 10s. 6d.

IN the selection of material for this book the requirements of the medical student have been given first place with the result that the carbohydrates alkaloids, and proteins as well as some other substances of biological significance have received rather more attention than is usually devoted to them in a book of this scope. A welcome feature is the adoption of the cyclic formulæ for the carbohydrates first suggested by Haworth; now that Dr. Taylor has shown the way perhaps future authors will follow his lead and help to familiarise the student with modern ideas of carbohydrate structure. The text contains a judicious blend of theory with practice and contains a number of illustrations of apparatus, together with a fair proportion of experimental details. Throughout the book the author has used tables illustrating the inter-relationships between compounds, and has propounded a number of well-selected questions at the end of each chapter; solutions to numerical calculations are provided at the end of the book. That the more recent views on structure have not been overlooked is evidenced by the inclusion of such subjects as valency linkages and zwitter ions. Misprints on the whole are few, but valency bonds have been accidentally omitted from the formulæ for calcium formate and for flavine on pages 433 and 546 respectively. We commend the book as thoroughly reliable.

THE LANCET

LONDON: SATURDAY, FEBRUARY 24, 1934

SURPLUS MILK FOR SCHOOL-CHILDREN

As other branches of farming have become less profitable the production of milk has steadily expanded, with the result that it has now outstripped consumption. For selling purposes there are two categories—namely, milk which is sold to the public and "surplus milk." The latter represents what is left over when the requirements of the liquid-milk market are satisfied, and it is sold to manufacturers to be condensed, dried, or turned into butter or cheese. At all times, and still more definitely under the scheme of the new Milk Marketing Board, there is a big discrepancy between the prices of these two categories: the price paid to the farmer for a gallon of milk for liquid consumption varies slightly in different areas but is in the neighbourhood of 1*s.* 2*d.* to 1*s.* 3*d.* at winter prices, whereas the price paid for surplus milk is only 3½*d.* Hence, from the point of view of the milk trade, and especially of the producer, there is every inducement to increase the consumption of liquid milk with its higher price and to reduce the proportion of surplus milk. It is recognised that the consumption in this country is very low (only about one-third or two-fifths of a pint per head per day), and since, in particular, the children of the poor get far less than they need, it is suggested that schemes should be devised for supplying some of the surplus at low cost through the schools.

At a meeting arranged by the Children's Minimum Campaign Committee, and held at the House of Commons on Feb. 15th, a proposal was put forward for a daily ration of fresh milk for all children attending State-aided schools and also for younger children. Recognising the value of milk to the growing child we are in full sympathy with this objective and we hope that it will be realised with as little delay as possible. Nevertheless there are several important questions which have to be answered before any such scheme can receive medical support. The chief of these concerns the purity of the milk supplied. The agricultural correspondent of the *Times* points out (Feb. 12th) that in order to increase the consumption of liquid milk "one essential is to win for fresh milk the wholehearted support of the medical profession." Unfortunately that support has *not* been won, and the profession is constantly affirming and demonstrating that the present ordinary milk-supply is not safe and is a vehicle for the spread of disease. A whole series of reports pointing this moral have been published within the last few years, yet agricultural interests have, on the whole, been unresponsive to the demand for safe milk and have opposed the measures which authorities advising the medical profession regard as necessary to provide a satisfactory supply. So little is the medical attitude appreciated that the report of the Reorganisation Commission for Milk (1933) requires for their "roll of accredited producers" conditions of production which certainly will not ensure safety. The agricultural correspondent of the *Times* is wrong in assuming that the medical support he admits is necessary can be got by the institution of such a roll, which ignores the real requirements of the profession. And apart from this suggestion nothing in the remarks made during the past week or two leads us to believe that consideration is being given to the purity of the milk supplied. The children are to be given milk because milk is good for them, and because a greater consumption of liquid milk will assist the producer it may be available at a lower cost than average present prices. The plan is that it should be supplied through education authorities. The parents of the children, however, will naturally expect the authorities to satisfy themselves that it will not convey disease. Unless the supply is Certified, Grade A (tuberculin-tested), or efficiently pasteurised, no education authority will be able to give such a guarantee. The responsibility of an authority providing milk is indeed no light one; for should it become possible to prove illness in any child from the taking of that milk, the authority would probably be held liable unless it had taken every reasonable precaution to provide a safe supply. In all too many parts of the country tuberculin-tested or pasteurised milk cannot yet be had in sufficient quantity to provide such a supply to schools. Of the possible alternatives pasteurisation on the premises is impracticable and boiling makes milk unattractive to children and would thus reduce the popularity of the scheme. It has also to be remembered that although surplus milk is not a different kind of milk, being merely milk not required for liquid consumption, it is, as such, largely available in districts not near big cities. Its use would probably involve transport in large tanks, and it has been shown lately that such "bulking" increases the proportion of milk contaminated with tubercle bacilli. With large bulk samples tubercle bacilli are found in every sample, and when it has been mixed in this way there is a special need of pasteurisation.

More milk is required for school-children and we must see that they get it. Wherever safe milk is available there is no reason why they should not have it at once. Beyond that, however, there is obvious and serious danger in an attack on the problem from the wrong end. The Drink More Milk campaign is a failure because, bluntly speaking, you cannot succeed in pushing an article which is under deserved suspicion. The first step towards increased consumption is indeed "to win for fresh milk the wholehearted support of the medical profession." In so far as there is a safe milk-supply the campaign in favour of its use will succeed, to the great benefit of the community. The necessary safety is attainable at little or no extra cost and it is regrettable that those responsible for the purity of the milk-supply are not yet prepared to accept those measures of security which have repeatedly been pressed on their attention.

CHEMICAL CONCEPTS IN IMMUNOLOGY

RAPID progress has been made during recent years in the application of chemical methods and chemical concepts to the study of immunity, and the time is certainly not far distant when every immunologist will have to acquire at least the rudiments of structural organic chemistry and a nodding acquaintance with those aspects of physical chemistry that are concerned in the reactions between antigens and antibodies. This is an excellent thing for the subject—it quite clearly heralds a phase of increased fertility and power—but it is a little awkward for the worker. Not everyone who reaches the immunological field via the medical curriculum has retained intact even that small store of chemical knowledge acquired in preclinical studies. To all such, and to many others whose knowledge is on a far higher plane, an admirable monograph by Dr. J. R. MARRACK,[1] published by the Medical Research Council, offers exactly the kind of information that is most needed. It gives a good general picture of our present concepts, both from the chemical and immunological side, and then discusses them in relation to a variety of antigen-antibody reactions. For those who wish to study any particular problem in greater detail a comprehensive bibliography is provided. Immunological workers will welcome with particular pleasure the section dealing with the shapes and sizes of molecules, and the forces that determine reactions between them. Dr. MARRACK describes clearly and simply the views with regard to molecular structure that have emerged during recent years, largely from the study of X ray spectra and as a consequence of the electronic theory of valency, and shows how they fit into and amplify the picture that the immunologist has been constructing by his own technique. Thus he emphasises the importance of the spatial arrangement of active groups on a large molecular surface, and points out that differences in the arrangement of such groups offer a reconciliation between the concept of chemical specificity and the concept of adsorption. Anyone who takes the trouble to master this section will obtain an illuminating mental picture of the nature of the reagents with which immunology is concerned.

Later sections treat of the nature of antibodies and of antigens, and the factors that determine reactions between them. Not only the immunologist but the chemist who desires to gain some acquaintance with the territory he is preparing to invade will find guidance here. Dr. MARRACK deals adequately with both the qualitative and quantitative aspects of the reactions he discusses, laying particular stress on those recent advances in knowledge that have placed technique on a sounder and more satisfactory basis. How recent much of this knowledge is may be gathered by noting the large proportion of the references that bear dates within the last ten years. But though those references are copious, the work is not merely a summary of the work and views of various authorities. Dr. MARRACK offers several stimulating suggestions of his own, as, for instance, his conception of the formation of an antigen-antibody "lattice," and his use of this conception in considering the effects of antigen or antibody excess in a reacting mixture. This monograph registers an important advance in knowledge and will help to push that advance still further.

[1] The Chemistry of Antigens and Antibodies. Medical Research Council, Special Report Series No. 194. H.M. Stationery Office. 1934. Pp. 135. 2s. 6d.

STANDARDISED EDUCATION

"PROGRESS," said Sir ARTHUR EDDINGTON, at the end of his Godlee lecture last week, "should be measured not by the questions we answer but by the questions we ask." By this criterion medical education must have made a great deal of progress in recent years, and by any other test we have every reason to believe that it has. The men and women who now leave our training schools are probably better equipped for their professional lives than they have ever been before, and this advancement gives fresh questions room to come to the front. One of the most interesting was asked by Sir CUTHBERT WALLACE, when last week he gave the Hunterian oration at the Royal College of Surgeons of England. Is it possible, he says, that we have gone too far in standardising medical education? Might it not be better to allow individual schools sufficient freedom to develop their own characteristics? And he points out that under the existing uniformity no one education authority is doing what it really believes to be best. The position seems to be much the same as with the language in which we speak and write. To allow a British child to grow up in ignorance of any tongue but Welsh or Gaelic is as criminal in our modern world as to start it off without the multiplication table and a knowledge of reading and writing. But the standard English which has permeated the country through elementary education and the newspapers has its losses as well as its gains. That it facilitates intercourse is obvious, and in a practical world it may seem wholly to the good that Herefordshire and Yorkshire and even the Lowlands should be able to understand one another without enough trouble to make conversation something of an adventure. But the gain is made by a deplorable impoverishment of our vocabulary, and our centralised language has thrown overboard and is rapidly forgetting all about those vividly expressive words which enrich every brand of homely dialect. It may be convenient that a foreigner who has learned to read the *Manchester Guardian* will have no further difficulty with the *Yorkshire Post* or the *Glasgow Herald*, but it is sad to hear from an authority that much of BURNS will soon be unintelligible to all but a few scholars. The individual language of the Bible and the Prayer Book still survives but it seems to be losing ground.

Everyone will agree that there is a certain common minimum of knowledge which must be made compulsory for all who aspire to practise medicine, and that this must reach beyond the analogues of reading, writing, and arithmetic. But it is surely unnecessary that it should extend to what may be called the sixth form work as well.

At present no student is free till his name is on the Medical Register, and the possibility of self-determination is one of the most pleasant experiences of those who qualify. Up to this consummation any degree of personal freedom within a medical school is hardly feasible except for those of exceptional intellectual capacity. But there is no necessity that the ideals of the schools should be restricted to the same extent. In fact the London schools give an exaggerated impression of uniformity; in the provinces, where each university conducts its own examinations, there is more individuality which cannot develop in London, where not even the largest schools are allowed to escape the drab conformity of examinations over which they have no control. Elsewhere the courses of teaching and learning are not all the same, nor is the general colour of the schools altogether monotonous. The predominance of physiology at Oxford is almost an extravagant example; nearly all Oxford graduates may be expected to carry with them at least traces of the unequalled course directed by BURDON-SANDERSON, GOTCH, and SHERRINGTON. But a similar if less conspicuous difference will be found between the men from Liverpool, Leeds, and Glasgow; they have been brought up in schools where values are not exactly the same and the product has a perceptible variety.

That there should be this variety we believe, with Sir CUTHBERT WALLACE, to be wholly to the good. Sincere people doing their best to devise the perfect curriculum will agree in all details only at the cost of unworthy compromise. Sincere teachers can standardise their teaching only by the sacrifice of those personal ideals and characteristics by which alone teaching can inspire. Within reasonable limits, let each go his own way. Most medical students come away from their schools with the impress of some particular teacher who happened to attract them and to whose teaching they attach exceptional importance. This fortunately is beyond the control of any central body. The same liberty can surely be allowed to the schools.

ANNOTATIONS

HEADACHE AND INTRACRANIAL PRESSURE

THE relationship of headache to intracranial pressure has perplexed clinicians for many years, for it has become evident that severe headaches may come on both when the intracranial pressure is increased, as in intracranial tumour, and when it is diminished, as in lumbar puncture headache and some cases of migraine. The discussion held by the section of neurology of the Royal Society of Medicine on Feb. 15th centred largely round this question. Several possible causes have been advanced to account for the headache, such as uneven tension on the dural septa (Trotter) or increases or decreases of tension in the lateral ventricles (Elsberg). It is a common observation that the headache of intracranial tumour usually comes on after the patient wakes. Only occasionally does it wake him up at night in spite of the fact that the intracranial pressure is greatest during sleep. Since surgeons have made a practice of exploring the brain under local anæsthesia it has become evident that only certain intracranial structures are sensitive to pain. The brain tissue and most areas of the meninges are quite insensitive, but the dura mater in the neighbourhood of the meningeal vessels, the larger surface arteries of the brain (Penfield), and the velum interpositum (Cushing) and choroid plexus of the lateral ventricles (Foerster) have been found to be sensitive, and anatomists have shown these areas to be endowed with nerves. It has also become increasingly evident that pain can only be perceived through the medium of somatic afferent nerves. The sympathetic system appears to have no afferent side and to be incapable of transmitting pain. It is therefore strongly probable that only those structures which are supplied with sensory twigs from the trigeminal and vago-glosso-pharyngeal nerves can be the site of origin of headache.

The experiments with the headache of histamine which were described by Dr. G. W. Pickering at the discussion take us some distance towards an understanding of the mechanism of headaches. Intravenous injections of small doses of histamine acid phosphate first cause a fall of blood pressure associated with a rise of intracranial pressure; as these are passing off headache comes on and remains for several minutes after both the systemic blood pressure and the intracranial pressure have returned to their previous levels. The headache is not directly due to the action of histamine, as with more prolonged instillations of the drug the headache does not appear until its administration is stopped. It can be relieved by inhalation of amyl nitrite, which dilates the cerebral capillaries, by compression of the jugular veins, or by any method which temporarily reduces the pressure in the systemic arteries. But if the intracranial pressure is reduced by withdrawal of cerebro-spinal fluid, compression of the jugular veins instead of relieving the headache aggravates it. These observations suggest that this form of headache is caused by some lack of balance between the pressures of the various fluid systems inside the cranium represented by the arterial, capillary, and venous blood and the cerebro-spinal fluid. Dr. Pickering suggested that it was produced in some meningeal or vascular structure near the point of entrance of the internal carotid arteries. It is evidently mediated by branches of the trigeminal nerve, since it never arose on the side of the head on which the Gasserian ganglion, or its sensory root, had been destroyed. Dr. Pickering has also shown[1] that the headaches of everyday life can be modified in an identical manner by alterations in the intracranial, capillary, or venous pressures. Lumbar puncture headache behaved in the same way as histamine headache after the withdrawal of cerebro-spinal fluid. He found however that the headache of meningitis could never be abolished by such measures, although it might be reduced, and he suggested that there was evidence here of direct irritation of sensitive areas of the meninges. Evidently the causation of headache is not altogether a simple matter, but Dr. Pickering's observations have definite value in that they both reduce the number of possible mechanisms and offer suggestions of treatment along rational lines.

LATE RESULTS OF MALARIOTHERAPY

WHILE few still question the immediate effects of the malaria treatment of general paralysis, some have expressed their doubts about its ultimate effects. Prof. H. Claude and Dr. P. Masquin[2] have

[1] Clinical Science, 1933, i., 77.
[2] Presse Méd., 1933, xli., 2005.

attempted to answer these critics by publishing a follow-up study of over 300 male patients treated between 1924 and 1932. Their patients are classified in five main groups. Those in the first were able to resume their former occupations, and those in the second had to descend the social scale only a step or two, being still able to undertake duties not requiring much initiative or quick readjustments. The patients in the third group showed some benefit from their treatment, and could attend to simple jobs under supervision, either at home or in an institution. In the fourth group no therapeutic success could be claimed, and the fifth was reserved for patients who died during treatment. This classification looks at first sight simple; but it is obvious to all familiar with general paralysis, with its infinite variety of "nuances," that it is difficult to allot to everyone his rightful and permanent place in any scheme. Claude and Masquin do their best to meet this difficulty by publishing numerous details and various tables and diagrams. One of their last tables is the most comprehensive. It shows that 41 per cent. of all the patients could be placed in one or other of the first two groups. The third group was represented by 17 per cent., the fourth by 18 per cent., and the fifth by 23 per cent. The conclusion drawn is that, without doubt, malaria treatment is the best at the present time for general paralysis, and should not be regarded as an exceptional measure.

TREATMENT OF LARYNGEAL TUBERCULOSIS AT DAVOS

THE *Journal* of the Davos Medical Society for January is given up to an exposition by Dr. Th. Rüedi of the treatment of laryngeal tuberculosis at an altitude of 5000 ft. in the Rhaetian alps. The climate of Davos he believes to be peculiarly suitable for pulmonary and laryngeal tuberculosis because of the stillness and dryness of the air, the large amount of sunshine, and the absence of fog; and he cites the high level at which the spruce trees flourish in the valley as evidence of its relative mildness. But the mistake is too often made of sending patients with extensive ulceration or perichondritis to Davos. Such cases, with throats already painful, are eminently unsuited to an Alpine climate, where the dryness of the air increases their sufferings; a dry climate also has a bad effect on a constitutionally dry mucous membrane.

Besides the general climatic treatment, Dr. Rüedi relies principally on the use of the galvano-cautery, which he now employs in as many as 33 per cent. of all his patients, and which he formerly used in 57 per cent. He produces extensive deep carbonisation of the tissues by means of a spiral electric cautery, a far more drastic method than the puncture with a fine point in general use in England; it is perhaps the result of this method that he finds a preliminary blocking of the superior laryngeal nerve by injection of alcohol a valuable means of countering the post-operative pain; that cauterisation of the larynx may light up a harmful reaction in the lungs; and that it is only allowable when the pulmonary condition has been inactive and afebrile during a period of one to three months of climatic treatment, and when the clinical picture combined with biological tests shows a good general and local prognosis. Used in conjunction with climatic treatment, one to four cauterisations have usually produced within a short time permanent results which were also satisfactory as regards function, and Dr. Rüedi therefore regards this form of treatment as the method of choice in cases of laryngeal tuberculosis with good general immunity. He has not employed generalised light therapy at Davos, but has treated 46 cases in the last six months with Cemach's laryngeal quartz lamp, a too recent period on which to form any conclusion; none of his cases can so far be said to have been completely healed by light treatment alone, but he has found a favourable effect in the direction of cleaning and diminishing ulceration and in allaying irritation.

Dr. Rüedi's collected figures between 1915 and 1925 show 36 per cent. of permanently healed larynges; he has not, however, continued these statistics, since the mortality caused by the pulmonary disease tends to falsify the results, but he considers that the percentage of cures has risen, largely in consequence of a stricter selection of cases by reference to the patient's general immunity. Statistics are indeed peculiarly misleading in tuberculous laryngitis, which is but a complication of a general disease, for the results must largely depend on the stage at which patients come under treatment. His treatment differs from the usual practice in this country in that he employs cauterisation in about twice as many cases of laryngeal invasion, and that he applies his spiral cautery to the surface of the larynx, in order to produce a deeply extending charring of the tissues, in preference to the cautery puncture in use here. He differs, also, in finding that collapse therapy does not exert any good effect on the laryngeal disease; he has seen cases in which laryngeal ulceration occurred in spite of clinical healing of the pulmonary disease.

THE PARALDEHYDE HABIT

PARALDEHYDE, like whisky, is unpleasant at first encounter, but the patient inclined to drug addiction may find in it an unsuspected charm. It is usually prescribed in the comfortable belief, derived from text-books, that it carries no danger of habit-formation; but as Dr. A. E. Carver [1] points out, this is to reckon without the mental make-up of the drug addict. Paraldehyde resembles alcohol in its effects, and is much cheaper, the same result being obtained for 1/25th of the price. Moreover, no social stigma attaches to the man whose breath smells of paraldehyde: he is more likely to be pitied than blamed. Dr. Carver believes that abuse of the drug has increased during recent years, and at Caldecote Hall he has observed no less than 18 cases of paraldehydism in the last eight years. The idea that a person disposed towards drug addiction is deterred by a nasty taste is fallacious; like the Chinaman quoted by Dr. Carver, the drug addict may well cry: "Me no drinkie for drinkie; me drinkie for drunkie." And often his own doctor is obliging enough to introduce him to paraldehyde, a drink quite admirably suited to his purpose.

Dr. Carver finds that if a nightly dose of two drachms of paraldehyde is continued for several weeks the patient loses appetite and develops gastro-intestinal irritation and flatulence; he becomes irritable, morose, and suspicious, and may be mentally confused and agitated, with muscular weakness and tremor of the hands. Tolerance is soon established and an increased dose is demanded. Martindale and Westcott state that half an ounce has been given, and that this is probably a maximum single dose, but Dr. Carver has known it to be exceeded by many addicts. If the use of the drug is prolonged, hallucinations and delusions develop and the final picture is one of mental and physical deterioration. In his series paraldehydism was always superimposed on other forms of addiction, most commonly alcoholism, and he finds that alcohol and paraldehyde tend to reinforce one another in action. Other drugs favoured

[1] Brit. Jour. Inebriety, 1934, xxxi., 73.

by patients in his series were morphia, cocaine, hashish, heroin, chloral, sal volatile, dial, and medinal. In discussing the treatment of these cases he reminds us of Wolff's dictum that "somatic detoxication is by no means a cure, but merely lays the basis for psychological treatment." The patient must be awakened to the causes which underlie his addiction and helped to face the situation with renewed will power. To make one drug difficult of access, he thinks, is only to bring another into favour; attention ought to be focused on the addict, not on the drug, and it is unreasonable to try to solve problems of addiction by making the temperate man suffer because of another person's "—ism." The last argument, though true of many drugs, scarcely applies to paraldehyde, a beverage from which most people prefer to be total abstainers.

SUPPLEMENTARY GRANTS FOR RESEARCH

THE trustees of the Ella Sachs Plotz foundation are anxious to make known the resources of their fund for the advancement of scientific investigation. The foundation seldom or never offers stipends to investigators nor does it provide apparatus and materials which are ordinarily part of laboratory equipment. Its special purpose is to give grants for the purchase of apparatus and supplies needed for special investigations and for the payment of unusual expenses, including technical assistance. At present research is favoured which bears on medicine or surgery, but grants will be given in the sciences closely related to medicine and will not be restricted to work dealing with similar or allied problems. In the ten years of its existence the foundation has made 200 grants—including one last year to the Academic Assistance Council—and investigators have been aided in 23 countries. A third of the money appropriated for use in 1934 is being reserved to help scientists who are at the present time without positions. Applications for assistance should arrive before May 1st, including statements about the nature of the research, the amount of money wanted, and the way in which it will be spent. The secretary of the executive is Dr. Joseph C. Aub, and he should be addressed at Collis P. Huntington Memorial Hospital, 695, Huntington-avenue, Boston, Mass., U.S.A.

MUCOCELE OF THE VERMIFORM APPENDIX

MUCOCELE of the appendix is so rare that the publication of two cases at about the same time is almost a coincidence. The exact cause of the cystic dilatation is obscure. Elbe, in 1909, laid down the following conditions as essential to its development: a slowly progressive stenosis at one or more points of the lumen of the appendix, absence of gross infection, and the presence of an actively secreting mucosa (or at least more rapid secretion than absorption). Both E. R. Easton[1] and (on p. 395 of our present issue) Dr. Brennan Cran add another condition—namely, the transformation of mucin into pseudomucin, which constitutes the contents of the cyst. Easton suggests that this is the actual determining factor, pointing out the difference between the incidence of mucocele (0·2 per cent. of a large series of post-mortems) and obliteration of the lumen of the appendix (25 per cent. of all adults, according to Gray's Anatomy).

Clinically, acute inflammatory attacks are a recognised complication of mucocele of the appendix, and may lead to rupture. In Easton's case there was macroscopic and microscopic evidence of acute inflammation in the wall of the cyst, which was removed at operation for supposed acute appendicitis. The patient was a man aged 47, who gave a history of occasional slight dragging sensations in the right iliac fossa. The abdomen was fat and rigid, and the cyst had not been felt before operation. It measured 11 cm. long and 22 cm. at its largest circumference. It was removed entire, and Easton emphasises the importance of this, since accidental rupture may result in subsequent pseudomyxoma peritonei. Like Cran, he comments on the absence in these cases of any trace of a mucosal lining to the cyst. Probably, as Cran says, pressure of the retained secretion ultimately leads to atrophy of the mucosa, which in its turn may put an end to any further increase in the size of the cyst. It seems probable that only in the very rare intermittent form, in which X ray examination is occasionally diagnostic, is an appendicular mucocele likely to be recognised before operation.

[1] New Eng. Jour. Med., Dec. 20th, 1933, p. 463.

ADHESIONS IN ARTIFICIAL PNEUMOTHORAX

THOUGH many years have passed since Jacobaeus first converted a partial into a complete artificial pneumothorax by the cauterisation of fibrous bands, there seems still to be an impression that this operation is a curiosity, which does little more than demonstrate rare dexterity. A paper by A. Tuxen[1] is designed to correct this impression by showing how the prognosis of many a case of partial artificial pneumothorax may be bettered by pneumolysis undertaken by a sanatorium physician who has mastered the not very complicated technique of the operation. He calculates that adhesions between the visceral and parietal pleura are encountered in more than three-quarters of all pneumothorax cases. His material consists of 115 patients on whom 122 thoracoscopies were undertaken, the average interval between the induction of a pneumothorax and thoracoscopy being five months. In 17 cases the thoracoscopic findings contra-indicated cauterisation. In the remaining 98 cases, 103 cauterisations were undertaken. The adhesions were single in 25 cases, multiple in the remainder. In as many as 50 what Jacobaeus has called "lung stalks" were found—extensions of lung tissue into the adhesions. The 103 cauterisations were followed by collapse of the lung in 32 instances and considerable detachment in 53. Eighteen were unsuccessful. From the beginning of 1931, when cauterisation of pleural adhesions was begun, to the end of June, 1933, a total of 264 patients were treated with artificial pneumothorax by Tuxen at his sanatorium. This figure was reduced to 165 so as to include only sputum-positive patients, and to exclude those in which the pneumothorax was not long maintained. These patients were classified according as they were or were not subjected to endopleural cauterisation, and it was found that 67 per cent. of the total were sputum-negative on discharge, whereas this percentage was only 45 for the patients not treated by cauterisation. Tuxen describes as the worst complication the development of a spontaneous pneumothorax which followed cauterisation in 5 cases.

[1] Norsk. Mag. f. Laegevidensk., February, 1934.

PERITONSILLAR ABSCESS

Prof. Canuyt and Dr. Daull, of Strasbourg, have written a full and valuable description[2] of quinsy, which they regard as a suppurative cellulitis, or phlegmon, rather than an abscess. Canuyt has taken much trouble to investigate the exact site of this affection—by autopsy in two fatal cases,

[2] Les phlegmons de la loge amygdalienne. By G. Canuyt, Professor de Clinique; and P. Daull, Chef de Clinique Oto-Rhino-Laryngologique, à la Faculté de Médecine de Strasbourg. Paris: Masson et Cie. 1934. Pp. 138. Fr.16.

by injection of the bed of the tonsil in the cadaver and (with radiography) in the living subject, and by tonsillectomy in the acute stage of peritonsillar abscess. He shows that the phlegmon is situated in the loose areolar tissue between the capsule of the tonsil and the muscular wall of the pharynx. This is the view that is generally accepted, and it might be thought that further proof was hardly required; but there are other theories which place the site of the disease in the tissues of the soft palate, in the pre-styloid space in the neck outside the wall of the pharynx, and, according to Killian, in the supra-tonsillar fossa. A quinsy may arise from dental infection, especially from a lower wisdom tooth, but Canuyt and Daull believe that in these cases there is always a tonsillitis which is the immediate cause. They have also observed in one patient a recurrence of quinsy after complete tonsillectomy, and they ascribe this to the presence of a congenital diverticulum of the supratonsillar fossa derived from the second branchial cleft.

The complications of quinsy are important and often serious. They include suppuration in the base of the tongue or lingual tonsil, œdema of the larynx, and abscess in the neck external to the pharynx from direct extension through the superior constrictor or from suppuration of cervical glands. Hæmorrhage is uncommon, but, owing to erosion of the great vessels, is very severe and seldom gives the surgeon time for treatment by ligature. Thrombosis of the cavernous sinus and of the jugular vein are rare but dangerous complications; they may supervene on an acute tonsillitis, but more often on a quinsy. Septicæmia is commoner and may be associated with meningitis or, more rarely, with cerebral abscess. Diagnosis of the condition is usually easy, but there is a "pseudo-phlegmonous" type of diphtheria which may imitate peritonsillitis, and some cases of peritonsillitis are slow to form an obvious abscess. In these cases Canuyt and Daull advise exploratory puncture with a needle and syringe; the needle is inserted through the lower part of the anterior pillar, a little above and internal to the last lower molar tooth, and passed upwards and backwards until it is felt to enter a cavity 1 to 2 cm. from the surface. It is claimed that this method allows an early diagnosis, and may prevent an unnecessary incision.

The method of opening a quinsy which the authors recommend provides the most important and original part of their book. They maintain that the incision in the palate usually practised, as well as that through the supratonsillar fossa, opens the abscess at its upper part and gives insufficient drainage. Prof. Canuyt's procedure is as follows. First he obtains local anæsthesia by infiltration of the anterior pillar and tonsillar bed with 0·5 per cent. novocain; this, he says, gives good anæsthesia and largely abolishes the trismus, which makes operation on a quinsy so hard. The next step is to retract the swollen anterior pillar, but, if this is difficult, he makes an incision from the summit of the arch between pillar and palate upwards and outwards in the direction of the muscular fibres. A long vertical incision is now made at the site of the free border of the pillar, in the position usually chosen to commence a tonsillectomy, from the level of the upper pole down to that of the last molar tooth. If pus is not found at a depth of 2 or 3 mm. the dissection is continued with sinus forceps until the abscess is found and laid widely open; evacuation is completed with an aspirator, and the tonsil bed is lightly packed with gauze, which is preferably impregnated with antistreptococcal serum, and changed daily. It is important to remove the tonsil at some time; this may be done *à chaud*, at the time that the quinsy is opened, and Canuyt has performed the operation over a hundred times; but he does not recommend it, for he has found it painful, dangerous, and often incomplete by reason of the swollen inflamed condition of the tissues. Tonsillectomy may also be performed *à froid* some weeks or months later; this is the usual procedure, but the dissection is made difficult by the adhesions which follow healing of the abscess and, when once the patient has left the hospital or nursing-home, he often fails to come back; hence the frequency of recurrent quinsies. Therefore, Canuyt and Daull strongly advise tonsillectomy *à tiède*, in the "tepid" stage, four to six days after evacuation of the abscess, when the temperature has nearly returned to normal. They claim that excellent local anæsthesia can be obtained at this stage, that the operation is easy and bleeding insignificant, and that recovery is remarkably rapid without fever and with little pain; they have performed it 100 times without any complications, and the publication of this method of treatment is, indeed, the chief object of their book. When we made an allusion to Prof. Canuyt's views last year [3] we suggested that the dissection proposed for opening the quinsy may not always be possible in a patient acutely ill and in great pain and unable to open the mouth. Indeed, the crux of the matter seems to be whether adequate anæsthesia can always be obtained, with concomitant lessening of trismus.

THE PROGNOSIS OF BREAST CANCER

FEW problems in surgery or pathology have been more diligently studied than the problem of cancer of the breast, yet it must be admitted that the chance of recovery from this condition has shown little improvement in the last 20 years. Dr. Edith Dawson and Miss Margaret Tod [4] in reviewing the prognosis come to the conclusion that it still depends chiefly on the answer to the simple clinical question—are the axillary lymph glands involved? When the glands are invaded, they believe, the disease has practically passed beyond effective attack. Attempts to define by histological methods a more precise dividing line between the hopeful case and the case in which a bad prognosis must be given have not met with much success. The histological grading of tumours, based on degrees of differentiation or anaplasia or on the amounts of fibrosis or lymphocytic infiltration, does not seem to furnish any very precise information about how the tumour will spread or the possibility of removing it with success. A study of the topography of the tumour is the most valuable means of assessing its malignant properties. The position of its malignant cells in relation to its stroma and lymphatic channels, rather than the cytological characters of its cells, is therefore the important point to be taken into account. Hence, Dawson and Tod emphasise the value of examining large histological sections taking in whole tumours. The single small section taken from one part is notoriously liable to mislead and should never be relied upon for prognosis, and in every doubtful case they advocate amputation of the breast and a comprehensive histological examination.

When they go on to consider treatment, they point out that while many new methods are now available, most of them require further trial and observation before their efficiency is confirmed. Radium has its uses, as is shown, for example, by some of the results reported on p. 400, but Dawson and Tod think the

[3] THE LANCET, 1933, i., 1189.
[4] Edinburgh Med. Jour., 1934, xli., 6

radical surgical operation is still the method of choice in the early and hopeful case. In the later case, where the glands are involved, some supplementary post-operative therapy is indicated, and they regard irradiation with X rays as the most certain of the measures available for this purpose.

ADDISON'S DISEASE

THE Therapeutic Trials Committee of the Medical Research Council are arranging an inquiry into the value of extracts of suprarenal cortex in the treatment of Addison's disease. The work will be done on the Committee's behalf by Prof. T. R. Elliott (University College Hospital, London), Dr. Robert Hutchison and Dr. S. Levy Simpson (London Hospital), Dr. J. F. Wilkinson (Royal Infirmary, Manchester), and Prof. D. Murray Lyon (Royal Infirmary, Edinburgh). As it is desired to admit to these hospitals enough patients for the inquiry as soon as possible, the Committee asks consultants and practitioners having suitable cases of Addison's disease under their care to communicate with one or other of the physicians named above.

HERNIA CAUSED BY ŒSTRIN

IN the course of experiments on ketohydroxy-œstrin which are in progress at the Cancer Hospital, London, the surprising fact has been brought to light that mice treated with this substance tend to develop scrotal hernia. The scrotal pocket in mice communicates very freely with the general peritoneal cavity, without any attempt at formation of a funicular canal, but in the ordinary way there is no tendency for hernia to occur, and among 580 mice not treated with œstrin not a single case of hernia was observed; nor, in the healthy animal, can the gut be protruded into the scrotal pocket by pressure applied to the abdominal wall. Yet of 49 mice treated with œstrin 19 developed herniæ, unilateral or bilateral, within 6–10 weeks of administration of the first dose. The œstrin was applied either by painting it on the skin or by subcutaneous injection. Mr. Harold Burrows, in his account of these observations,[1] points out that there is adequate evidence that œstrin applied to the non-epilated skin of the back is absorbed in amount sufficient to keep the female mouse in a constant state of œstrus, and to cause the vaginal canal to become blocked with a mass of keratinised epithelium. There seems, therefore, no reason to doubt the fact of the absorption of the substance in the male mice in effective quantity. Two known effects of œstrin administration to the male mouse which might have some bearing on the appearance of hernia are atrophy of the testis and prostatic enlargement. Both, however, are late effects, whereas hernia occurs early. Moreover, rats in which testicular atrophy has been produced do not develop hernia. Prostatic obstruction in the mice eventually progresses so far as to produce distension of the bladder with overflow and hydronephrosis, so that it seems, at first sight, that the straining efforts during micturition might be sufficient cause for the hernia. But these effects have not been noted earlier than the fifth month after the first dose of œstrin, whereas hernia is observed as early as 35 days after the beginning of treatment. In one experiment, 11 of 13 mice alive 47 days after the first dose had herniæ. Burrows explains the phenomenon as an effect of œstrin on the tonicity of the musculature controlling the entrance to the scrotal pocket. He suggests that relaxation of these muscles may be analogous to the relaxation of the pelvic muscles and ligaments during the later stages of pregnancy in the presence of large quantities of circulating œstrin.

[1] Brit. Jour. Surg., January, 1934, p. 507.

BLOOD REGENERATION

A RECENT discussion[1] on blood regeneration in experimental anæmias and in anæmias occurring in clinical practice showed that much is now known of the normal response occurring after hæmorrhage or when a deficiency of essential factors is made good in deficiency dyshæmopoietic anæmias. The mechanism by which certain factors inhibit hæmopoiesis is still unknown. Dr. Hamilton Fairley described a series of important observations upon regeneration occurring in tropical anæmias, which illustrate our ignorance only too clearly. For instance, in anæmia due to amœbic abscess of the liver, reticulocytosis and blood regeneration follow the administration of emetine; and the disappearance of parasites, after treatment with quinine or atebrin, both in naturally infected cases of malaria and in syphilitics artificially infected, is followed by a reticulocytosis proportional to the degree of the anæmia. He concludes that once the cause of the anæmia has been dealt with, in the absence of other inhibitory factors, some conservative mechanism automatically stimulates the erythroblastic tissue of the bone-marrow and results in a rapid blood regeneration. Why removal of the infective agent should immediately result in such regeneration is not clear. Dr. Janet Vaughan pointed out that in the deficiency dyshæmopoietic anæmias sepsis possessed the same inhibitory power; in the presence of infection enormous doses of potent material are without effect. She also discussed the inhibitory action of achlorhydria, failure of intestinal absorption, and of arteriosclerosis, which are as little understood as the effect of sepsis. Prof. A. E. Boycott described results of experiments which suggest to him that the bone-marrow learns from experience. He found that blood regeneration following a second hæmorrhage in an animal was more rapid than to a first hæmorrhage. This is possibly due to the fact that the stimulating action of the first blood loss has increased the amount of active bone-marrow. He put forward the suggestion that if fresh red cells are likely to be needed—for instance, in climbing Mount Everest—the rational preparation is a course of bleedings to give the marrow experience and practice. It would be of interest to know at what point depletion of the body's store of hæmopoietic factors would counteract the increased amount and experience of the bone-marrow.

COMFORT IN THE TROPICS

CONSIDERING its importance, little experimental work has been directed towards the reduction of discomfort from heat in the tropics. Those who live in these regions should therefore welcome the very practical suggestions made by Dr. G. P. Crowden in our issue of Jan. 6th. The principles involved are simple. Since the classical experiment of Franklin with cloths of different colour on snow, we have known that black surfaces absorb most heat and white least. But the inner surface of a container may radiate the heat it has absorbed from the outside, and it is also known that a bright metallic surface radiates very little heat compared to other surfaces. In addition, the conductivity of air is very low: thus, if the thermal conductivity of still air be taken

[1] Royal Society of Tropical Medicine and Hygiene, Feb. 15th.

as 1, that of wool-fibres is 6 and of cotton is 30. Applying these two principles Crowden showed that effective insulation is provided by an air-space containing a sheet of asbestos covered on both sides with metallic foil, and various types of containers—such as huts, boxes, and sun helmets—were made comparatively heat-proof by this means. A block of 16 lb. of ice was found to have 7 lb. remaining unmelted after 23 hours in an insulated container, whereas a similar block in an ordinary container had melted altogether. Similarly the insulated helmets proved 5° or 6° cooler under a tropical sun—a reduction which might make the difference between sweating and not sweating, with all that this implies in loss of water. On his journey to Egypt, it may be recalled, Dr. Crowden made various experiments on the application of aluminium foil insulation to conditions on board ship. Some of these were distinctly promising and the promise has since had independent confirmation in some tests recorded by Major T. O. Thompson.[1] Using aluminium foil on a paper base—which was not found altogether satisfactory—Thompson succeeded in intercepting heat rays from hot walls, steam heaters, and hot pipes in cabins. "The steam pipes," he writes, "were then loosely enclosed in some pieces of aluminium sheeting, which were fitted round and tied on, in quite a makeshift manner, with string. The difference in temperature of the berth was at once perceptible even while carrying out the work, and the occupant of the berth was quite emphatic and thankful for the improvement achieved."

The problem of making the tropics tolerable to the white man has been approached from a somewhat different angle by Majors R. A. Anderson and J. C. Sproule,[2] who have studied certain air-conditioning plants in Hong-Kong and Bombay. They conclude that an artificial system for cooling and de-humidifying the air would be of great use in many buildings in the tropics, but that both capital and running costs preclude its adoption at present except for hospitals and especially for operating theatres. Judging by the results of the plants at present installed in this country there are many technical difficulties still to be overcome.

THE LAMB CENTENARY

CHARLES LAMB, the centenary of whose death occurs this week, is not only a great figure in English literature but possesses also unique and pathetic medico-literary interest, as the inheritor of a strong familial tendency towards insanity which produced periods of acute mania in his sister and distinct psychoneurotic traits in himself. Apart, however, from six weeks of confinement at the age of twenty-one—after an unhappy affair of the affections—he resisted more or less successfully throughout life any serious psychopathic tendency. Unfortunate domestic conditions—the spectacle of a parent's and a sister's insanity and the fear of a return of his own earlier condition—accentuated a constant struggle to perform literary and clerical work; tragic interruption attended the work, but much true friendship, joy of living, and a hundred loyalties combined to produce in Lamb a human, as well as literary, character, unique perhaps in literature. When he was twenty-one his sister Mary, seized by an acute mania, stabbed her mother to death; she was diagnosed as an incurable and dangerous lunatic, and was rescued from permanent institutional confinement only by Lamb's acceptance of personal responsibility for her custody. Throughout life he was perpetually embarrassed by periodic returns of her condition and by constant endeavours to secure for her a type of environment in which she would be least dangerous to herself and others. Such instability, however, did not prevent Mary Lamb's joining her brother in one of the unique partnerships of literature, the production of the "Tales from Shakespeare."

Physically Lamb was a smallish, thin, nervous, and active creature, with a domed forehead, a protruding lower jaw, and a frame and legs small in proportion to his head. He possessed a marked impediment of speech, and this, combined with his consciousness of other drawbacks, led him as a young man to despair of any substantial advancement in life. Indulgence in even minimal quantities of alcohol produced in him a considerable degree of intoxication, and he consistently over-smoked, but the two frailties did not prevent his keeping his post of clerk to the East India Company for thirty-three years, during which time he also produced the essays and literary criticisms which have given him an assured place in English letters. In "Confessions of a Drunkard," one of the best though not the best known of his essays, he has left a most frank and graphic account of the temptations and subjective experiences resulting from what might be termed to-day an impulsive psychasthenia with tendencies towards alcoholic addiction. Of the pangs of an addict deprived of his stimulant, and crying aloud for the anguish and pain of the strife within him—the addict was Lamb—there have have been few more expressive descriptions. From a medical point of view, the most interesting of his writings are those—for example "Dream Children"—which reveal the successful adjustment of a mind of great affection and sensitivity to a material environment of deep loneliness, frustration, and discomfort. He possessed a unique prose style, a rare critical faculty, and a genius for friendship; and when he died in 1834 from erysipelas, contracted by stumbling and falling while walking on the London Road, Edmonton, all England mourned. Students of Sir Thomas Browne, among whom many doctors will necessarily be found, will see in much of the writing of Elia a remarkable example of how a writer of great critical insight and sensitivity can be influenced to an extraordinary degree by the style and manner of an author dead two centuries before him.

WE regret to announce the death on Monday last of Mr. J. F. Dobson, hon. surgeon to the General Infirmary, Leeds, and professor of surgery in the University.

Surgeon Rear-Admiral R. W. B. Hall has been appointed medical director-general of the Navy in succession to Surgeon Vice-Admiral Sir Reginald Bond, who is retiring next July.

Children's allowances made further headway in the House of Commons on Tuesday last, when an amendment to increase the allowance from 2*s.* to 3*s.*, proposed by Sir John Haslam and supported by a group of Conservative members, was only rejected by a vote of 177 to 125. The House was dealing with the public assistance part of the Unemployment Bill, and the proposal was the same as that made by Captain Crookshank during the discussion of the insurance part of the Bill on Jan. 29th, which was rejected by a vote of 200 to 104.

[1] Jour. Roy. Army Med. Corps, February, 1934, p. 85.
[2] Ibid., 1933, lxi., 241.

THE PREVENTIVE ASPECTS OF MEDICINE

A Series of Lectures in progress during the Winter Session at King's College Hospital Medical School

XVI.—PHYSICAL EXERCISE AND SPORT AS PREVENTIVES OF DISEASE

THE very title of this lecture begs a question. Is there really any evidence for the assumption, which has become more or less second nature with hundreds of medical men and millions of laymen, that physical exercise and sport really do prevent disease? When this proposition, which at first sight seems self-evident, is carefully examined, there is far less ground for it than most people think.

It is probably the experience of most physicians that a magnificently fit active man is just as likely to develop pneumonia or any other respiratory disease as a sedentary one. Everyone with friends who go abroad for winter sports is familiar with the complaint that they promptly catch influenza or bad colds when they return. Few men deteriorate so rapidly and decisively in middle age as the boxer, and finally, every doctor knows people who take little or no exercise, and yet remain perfectly well.

EVIDENCE FOR A PREVENTIVE EFFECT OF EXERCISE

These commonplace reflections suggest that any recommendation of physical exercise on the ground that it prevents disease calls for severe scrutiny. In this article I have tried to set out the evidence that it does. It is conveniently classified as physiological, racial, statistical, contemporary, and clinical.

Physiological investigations.—Numberless investigations have been carried out on every system of the human organism before, during, and after exercise, and comparisons have been made between the reactions of trained and sedentary workers. From the great mass of this literature emerges one curious fact, none the less remarkable because it is negative: there is an extraordinary dearth of indisputable evidence—in the sense that the evidence in favour of vaccination or antityphoid inoculation is indisputable—that physical training produces a condition of the organism that protects it against disease. I am not belittling the value of these experiments; it is most useful to know that the physically trained person has a better blood picture, better respiratory exchanges, and slower onset of muscular fatigue than the untrained. But I have found no record of a physiological experiment which has traced these several data over long periods of time in the same subjects as they have passed from an active, strenuous life to a more sedentary one; which has studied their liability to incidental disease; or has compared their fate in these respects with that of untrained persons during the same period. Moreover, in physiological experiments which compare groups of trained with groups of untrained subjects, a few of the untrained always return figures which should place them among the trained and vice versa, though the average performance of the two groups may be strikingly different. This discrepancy usually means that some factor has been overlooked.

Racial or international considerations.—Attempts have been made to trace a connexion between the activity or indolence of different races on the one hand and the duration of life and standard of health of their nationals on the other. These correlations are too greatly complicated by such factors as geographical conditions, diet, religion, and sexual habits to be of real value for our purpose. There is a vague general impression that the hardy mountaineer is more immune from disease than the indolent dweller in the plains, but concrete evidence to support this idea is very difficult to find.

Statistical data.—The life tables of the Registrar-General provide no evidence that persons who take constant physical exercise enjoy any extraordinary span of life. Death certificates do not include any data on past illnesses or proficiency in sports, and official statistics, therefore, give no help towards answering the question whether physical exercise prevents disease.

Contemporary experience.—This class of evidence is definitely more promising than the others that have been considered. The Board of Education have paid, during the last half-century, progressively more attention to physical exercise, games, and posture. It is a revelation to open one of the old instruction books and examine the pictures of a class doing physical exercises fifty years ago, and then to turn to a series of pictures taken in the schools of to-day. The old pictures betray a complete indifference to freedom of movement, rhythm, enjoyment, suitable clothing, or fresh air. The new pictures speak eloquently of keenness, joie de vivre, vigour, and the spirit of competition. The old tell of monotony, repetition, cramped bodies, and strained muscles; the new of variety, freedom, and wide range of movement. Instinct declares that the change must be good, that it must have taught the body to build up fresh barriers against disease. Nevertheless, it is impossible to point to the falling death-rate from infectious disease and claim it as a direct consequence of this change in the national outlook on physical hygiene. There are too many other factors at work. The Board of Education, however, recognise physical training as important, in combination with medical inspection, proper feeding, good hygiene, and a suitable environment, and give it special emphasis in their Syllabus of Physical Training for Schools, 1933, an impressive publication.

Nevertheless, general fitness and immunity from disease must not be confused. During the war the late Colonel Mayes organised for the Royal Air Force a form of intensive physical training that was chiefly based on competitive games in groups and a regular and rapid sequence from group to group. The whole method was planned to exclude all monotony and excessive repetition, to hold the attention and interest, and to awaken the team competitive spirit. The results were remarkable, and were a tribute to this remarkable man. In a very short time recruits and cadets became alert, keen, and quick, and a camp which used this method radiated an atmosphere of purpose and vigour. In most units the posture of the men improved out of recognition, and the medical officers in charge had no doubt that the finished product was more immune from disease than the raw material. When, however, the great influenza epidemic of 1918 swept the service, the numbers that went down in these outstandingly healthy communities were alarming. There were no comparative statistics to show whether, all other conditions being equal, camps with this form of physical training had less or more sickness and death than camps without it, but there was no apparent superiority in the super-healthy units.

During the war I was able to carry out a small comparative experiment which was encouraging at that time, and

has been, I think, of permanent value. It threw a helpful light on two questions: (1) whether good physical condition prevents breakdown and disease; (2) the relation of good physical condition to the fundamental qualities of character. In 1916 the War Office established a special medical board of four officers to examine candidates for commissions as pilots in the Royal Flying Corps, now the medical service of the Royal Air Force. This small board could, of course, only deal with a fraction of the candidates, the remainder being passed by army examining boards. It developed its own special methods and special standards, and before long its members began to believe that its selected candidates were better than those chosen by the army boards. In order to see whether this was so, I obtained from the D.A.A.G. the names of 2000 men passed in by our board and 2000 men passed in by other boards. I then ascertained the numbers from each group that had passed successfully as pilots ready for overseas. With the help of the training department, I worked out the total cost of a fully trained pilot. The difference between the number of unsuccessful choices made by our board and the number made by all the others, expressed in terms of money thrown away, was a sum large enough to pay more than ten times over for a special board sufficiently numerous to examine all candidates. A closer analysis of the causes of failure of chosen candidates to graduate as pilots showed less invalidism, less nervous incompatibility, and fewer crashes in our group than among those selected by the army boards. On those figures we obtained our board and an army order that every candidate must pass our special tests.

This investigation proved that men who were physically fit for a certain very exacting course of instruction were more likely to succeed in completing it than men who were not, and that one of the effects of their fitness was to keep them freer from illness. Their special fitness for their vocation is a very significant factor, for it is generally recognised that much physical illness as well as mental distress is caused by trying to do a job or lead a life for which the organism is by nature unfitted.

Dr. C. H. S. Taylor, an old rowing Blue, has devoted much time since the war to a study of the health of the undergraduate, and particularly to the effect of sport and training on the cardiovascular system. In particular, he possesses some unique data on the crews of university boats at various stages of their training. Although these records show a general uniformity in the progressive effect of training and exercise on the blood pressure and allied factors, nearly every crew seems to have its freak individual, whose data are so different from those of the remainder that if the physician relied only on the recorded figures and did not trust his experience and general clinical sense, he would probably condemn the odd-record man as unfit. These men, who give unsatisfactory data on their tests but nevertheless impress the examining doctor with a sense of their fitness, generally come through the strenuous period of training and the more strenuous boat race very well; they do not seem to go stale or sick any more easily than the men with the most excellent records. On the other hand, there is no evidence about their after-history; whether they remain fit or whether their "odd" records are the early signs of a low resistance to disease.

Clinical evidence.—Clinical experience and case reports provide some of the most convincing—albeit indirect—evidence that exercise does prevent disease. Every practitioner has met patients who, when put on regular and regulated exercise, have lost their predisposition to this or that complaint; by means of their exercise or sport they have driven back the invading disease. If regular and regulated exercise, and sport in moderation, will drive out an established illness, it is much more likely to be able to prevent disease. Another important piece of evidence is that when a person who takes regular exercise sustains a minor fracture which cuts him off from his regular sport, he often deteriorates and may even suffer from ailments from which he has been free for years.

Nevertheless, there are fallacies in both these arguments. Some individuals, when cut off completely and for a long time from their regular sport, seem to remain as well as ever and are certainly no more liable to disease than before. Some, on the other hand, deteriorate so rapidly and disastrously that their lack of exercise alone is not a sufficient reason for this change. Moreover, all physicians know the patient who ought obviously to respond well to physical exercise and does not, and also the patient who responds better than the average.

LESSONS FROM THE EVIDENCE

The first lesson from the evidence is to beware of the many fallacies inherent in material of this kind. One of the chief of them is that an average result obtained from the study of a group of individuals does not necessarily represent the truth concerning any one individual, and that the student who contemplates an average may obtain a less trustworthy idea of the truth than if he studied one human subject. Many fallacies are inherent in the technique of physiological testing. Moreover, the subject who provides an ideal example of the perfection of one function may not, and probably does not, represent the ideal citizen which the State should endeavour to multiply. The marathon runner may be a splendid long-distance running machine, but below the average in the capacity to reason and adapt himself to circumstances. This thought leads naturally to the conclusion that sport or physical training as a preventive of disease is by no means the same thing as sport or physical training cultivated as an end in itself. The whole-time tennis champion, by turning his sport into an occupation, takes it into a completely different category, from the medical and social point of view alike. The general health of the body depends so much on good posture that physical exercise, which has a beneficial influence on posture can at any rate put forward a prima-facie claim to avert disease. Moreover, good habits of posture acquired in youth will exert whatever protective influence they may possess throughout life. Possibly greater than the physical benefits of exercise, however, are the moral and mental characteristics which it develops: alertness, courage, endurance, and determination. Even more important, a well-constructed system of physical education will enable the instructor to detect and train the natural leaders among the class. A small percentage of every group of persons are gifted with an inborn capacity to plan and direct the activities of their fellows. Modern civilisation is crying out for leadership, and not nearly enough attention has been paid to providing it. Moreover, potential leaders who are denied opportunity are likely to turn into rebels. Physical training and sport are a splendid method of cultivating leadership, and this is an integral part of any good system of collective exercise. Teachers must be trained to spot these nuclear men, who are the creators of employment in the community.

THE PROVISION OF PHYSICAL TRAINING

This brief survey of the evidence is somewhat disappointing in that it hardly offers even a hint of proof. Nevertheless, practical and responsible persons in every walk of life are convinced, not necessarily that physical training averts disease, but that it is

a good, even an indispensable, thing. Everyone in authority is concerned with the problem of providing adequate sport and physical training for those whom he has in charge, in the belief that it improves their general health and efficiency and their capacity for mental activity and response, and develops in them the qualities that make them better members of a community. To the legislator it is an instrument for educating the minds and bodies of the children who will compose the nation of to-morrow, and for improving the discipline and health of the police and the fighting Services. The industrialist provides playing fields and instructors because he knows that if his workers get proper exercise they are happier, do better work, and are less often absent through illness. The head of a school, hospital, or any other non-commercial institution encourages organised sport to foster the corporate life and spirit of the place. The philanthropist, through clubs and institutes, uses sport to develop from downtrodden and undisciplined slum-dwellers keen and purposeful citizens. A wise man will impose physical discipline on himself; if he has leisure, he may make it an occupation for the larger part of his time; if he is a hard worker at a sedentary calling, he will use it to correct the habits of his working life. Finally, the physician directs his patient to take regulated exercise as a therapeutic measure, to prevent the degeneration of body and mind which is often associated with inactivity after illness or an injury.

The physician's problem.—The physician prescribes sport and physical training in the form of (*a*) systems of individual exercise, or habits of sport; (*b*) recreational therapy; and (*c*) occupational therapy.

Systems of individual exercise are very numerous and vary in value and in the appliances required for their pursuit. The physician has to choose the best according to his own judgment, or to construct a new system by selection from the existing material, possibly supplemented by ideas of his own. My personal preference is for the systems of Müller and Hornibrook, because they are skilfully designed to stimulate and exercise the liver and the lymphatic and sympathetic systems, and pay special attention to the abdominal musculature. There are a number of other systems, with many good points.[1]

Individual exercise or sport must be regular; to spend the week in an office and then play three rounds of golf on Sunday is likely to do more harm than good. Exercise must also avoid monotony. A repetition of boring exercises for conscience sake in which the mind and will do not participate does little good, for one object of physical training is to develop the will and unify the personality.

Recreational therapy is chiefly suitable for well-to-do convalescents, as most of its forms entail some expense.

Sports useful for maintaining the general condition or giving general exercise in convalescence are fencing, swimming, squash racquets, badminton, skating, and dancing; they can all be practised indoors and after dark and give ample exercise in a short time. For reconditioning the patient after injuries to an upper extremity and for improving coördination I recommend punching a ball, preferably of the hanging type; fly-casting; archery; clay pigeon shooting; punting and exercise with Indian clubs.

Occupational therapy is far superior to exercise with apparatus, because it is an excellent mental stimulus and discipline and develops the creative function in a more direct way than any sport can. It is indispensable for mental patients, and its great value in the general hospital is just beginning to be realised. It has the additional advantage of being a means of distinguishing accurately between the genuine patient and the malingerer.[2] It has a great future as the motive force in colonies for disabled persons to save them from chronic invalidism; already it has proved its value in this respect at Papworth, St. Dunstan's, and Colonel Bostock's camp during the war.

THE REAL BASIS OF PHYSICAL TRAINING

As far as I can see, there is one common factor and one only which relates exercise to immunity against disease. That factor can be expressed in the single slang word "guts." It is an indefinable force that has been described under many less vivid if more decorous names. In some way sport and exercise favour the development of a quality, which is the most potent—some may think the only potent—defender of the organism against disease. Some day its profound significance as a physical factor will be acknowledged and some method will be devised of measuring it; and that day will be a supremely important one for the health of the world.

If the modern enthusiasm for physical training is to be developed on sound lines it must be based on a much more accurate knowledge of human physiology than is at present available, especially of the functions of the liver and the lymphatic and sympathetic systems. This knowledge can only be provided by close and increasing coöperation between physiologists and clinicians. Far more urgent still, however, is the need to study the physical basis of character and leadership, and to evolve a method of measuring it. This form of research will need the combined investigations of psychologists and physiologists, with special experience of industrial and recreational work, on the persons of known leaders of men. The knowledge when acquired would be used to detect in their earliest childhood the future leaders in all departments of social activity, and to train them according to their individual aptitudes to the full fruition of their powers. The vocational psychologists could offer many examples; one came under my own observation during the war.

The pilot of a fighting aircraft requires, besides physical fitness and efficiency, many of the essential qualities of leadership. Although the tests invented by the medical board, assisted by the clinical judgment of assessors, were an excellent eliminator of unsuitable candidates, they fell short of indicating the more important and elusive qualities of which we were so much in need. Then Wing-Commander T. S. Rippon introduced a very simple device—the domino test. A set of dominoes are placed face downwards on a table and the candidate, working against a stop-watch, has to turn them up and build a sequence in the usual way, joining numbers of the same value. One second is added to his time for every pair of wrong numbers he joins. Large numbers of pilots were put through this test and the results were surprisingly consistent. Pilots who had distinguished themselves in single-seater fighting scouts would complete the test in 49 seconds; two-seater pilots would average about 55 seconds; heavy bomber pilots would take 60 seconds; and rejected candidates would require 70 seconds or more. This test, therefore, came nearer to measuring the special factors required for air pilots than any other I have seen.

This test was not, of course, a true measure of character or an assessor of leadership, but it suggested that these qualities were capable of measurement. I believe that they will ultimately turn out to be just as certainly physical properties as any known physiological process in the body and no more incapable of

[1] Through the courtesy of Mr. Hornibrook, who lent one of his instructors, I was able at my lecture to demonstrate his system of exercises, which is based largely on Hawaiian and Maori dances.

[2] See THE LANCET, 1930, ii., 1028.

measurement than the properties of the electron. When science has grasped and apprehended how to measure character and powers of leadership, and learned how to cultivate them, we shall realise that physical training has never been an end in itself; has never been confined to the production of mere physical efficiency or a race of warriors, but has all along been groping its way towards the cultivation of leadership and the fostering in every man of the essential "guts" which enables him to ward off disease of body and mind while he subordinates the forces of Nature to his will.

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SPECIAL ARTICLES

ABERRANT THIRD MOLARS AND THEIR MENACE [1]

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THE third molar is an interesting tooth and in many ways a perplexing one. It shares with the lateral incisor extreme variation of form; it competes with this tooth and the second premolar for total suppression; and it rivals the upper canine in becoming fully developed but remaining buried in the jaws. It has another characteristic, that of partial eruption, in which the foremost portion of the occlusal surface emerges from the gum, showing perhaps only a single cusp, and the rest of the crown remains buried in its developmental crypt—merely invaginated, but not attached to its cover. This is an important factor in the pathology of the tooth, for, though the completely buried tooth may remain uninfected (and this is denied by some), the moment communication with the mouth is established, the ingress of pathogenic organisms into a confined harbourage is permitted. Septic infection from this focus alone is responsible for a large amount of ill-health, either spontaneously or as a complication following untimely or unwise operative measures. This is exemplified particularly in the trismus and tonsillar infections of the young adult, and in the middle-aged in adenitis and the variety of lesions due to focal infection. Vincent's infection, for example, is well known to recur in the same individual when a partially erupted wisdom tooth remains to form the nidus.

The roots of the third molar—particularly the lower one—are subject to extreme variation in size and shape, and the crowns also show perplexing differences of size. This question of size is also important in pathology—for, whereas a small conical tooth, provided its direction is right, may easily erupt fully into a cleansable functioning position, full eruption of a large lower third molar may reasonably be expected to entail more difficulty and its impaction or its semi-eruption may result. It was shown by John Hunter and confirmed by John Tomes and more recently by K. Corisande-Smythe and Matthew Young that no appreciable growth takes place in the dental arch forward of the first molar after birth. Thus the large permanent teeth of the adult dentition in front of the first molar are compelled to arrange themselves in a bony arcade which has been provided for them actually before birth. Any growth, therefore, which takes place for the accommodation of the second and third molars must occur posteriorly to the first molar. This constitutes a lengthening of the alveolar ridges, in the maxilla by a prolongation of the tuberosity, and in the mandible by an absorption of the root of the coronoid process.

Sir Arthur Keith described the development of the antrum as a factor in the eruption of the upper molar teeth which are developed high up in the posterior wall of that sinus. In their developmental position, the second molars are formed with the biting surfaces facing downwards, backwards, and somewhat outwards. With growth of the antrum occurring contemporaneously with dental development and eruption these molar teeth are "wheeled" down, as it were, into place and the germ of the third molar now occupying the same relative position in the posterior antral wall repeats the process. If, however, some hindrance to skeletal development occurs, then the wheeling down process is stopped prematurely and the tooth, remaining in its developmental position, finishes its growth in that infantile position and attitude.

Similarly in the mandible the molar teeth are formed in the root of the coronoid process, not deeply in the bone, but actually extending up the anterior border of it in the early stage of their development. Again there is a "wheeling" down process as the alveolar ridge extends backwards and the border of the ascending ramus retreats. The mandibular molar teeth are mostly found placed in the opposing direction to the maxillary ones, that is, the occlusal surface slopes forwards and upwards and inwards towards the tongue, in fact the attitude of the common mesio-oblique impaction of the mandible. If skeletal arrest takes place before the third molar has been "wheeled" down to its vertical position and before sufficient development has taken place posteriorly to allow free egress of its occlusal surface from the root of the coronoid, then impaction either with the molar in front or with insufficiently receded coronoid behind occurs.

The conclusion I draw from an examination of a great many radiograms of the jaws of young children and adolescents is that the common impaction of the mandibular third molar, as also the common failure to complete eruption of the maxillary one, is the maintenance of the tooth in its developmental position by the premature arrest of skeletal development. Whilst it is not within the ambit of this lecture to assign the cause of this, it is at least significant that the few cases of impacted molars in the monkey in our museums have occurred in those which have suffered from rickets. How the other types of impaction occur is part of an investigation now in progress.

SYMPTOMS AND SURGICAL ANATOMY

An examination of the analysis of my collected reports shows that the symptoms may be divided into those produced by pressure of the tooth in its endeavours to erupt and those which follow infection. The former range from neuralgia of a severe type affecting various branches of the trigeminal nerve to curious irritations of the central nervous system, like the case of epilepsy recorded by Hildred Carlill last year.[2]

The symptoms of pressure appear mostly also to affect patients under 30, and particularly those in their early twenties. The symptoms of infection are those of local manifestation such as suppuration of the crypt and those of toxæmia. In this connexion the importance of the relation of the upper tooth to the antrum and of the apex of the lower tooth to the mandibular canal and its contents is emphasised both from a pathological as well as from an operative point of view.

Other relations of importance in the mandible are

[1] Abstract of an Arris and Gale lecture delivered at the Royal College of Surgeons of England on Feb. 21st.

[2] THE LANCET, 1933, i., 1005.

the tonsils, the lingual nerve, and the nearness to the surface of the inner aspect of the mandible of the apex of the third molar root. In some dry specimens the apex of this tooth may be seen almost perforating the bone. Since this occurs below the mylo-hyoid ridge, infection of the socket very easily gains access to the deep cervical planes—notably in the cases of post-operative angina (Ludwig) following the prolonged trauma of a difficult extraction.

OPERATIVE MEASURES

With the advent of intratracheal and block anæsthesias, giving the operator both the time and the comfort for gentle and deliberate manipulation, and facility for examining the conformation of the roots by X ray, the whole character of the operation for the removal of the third molar has changed. Twenty years ago and even later, the intention was to remove the tooth whole and in one piece, irrespective of the amount of contusion to the bone and laceration to the surrounding soft tissues. Nowadays the ideal is to remove the tooth, if necessary in ten pieces, provided the surrounding tissues are not traumatised and the removal is not accompanied by "blind digging," but is part of a consistent operative technique, and is planned upon a pre-operative skiagraphic location of the anatomical landmarks.

G. B. Winter appears to have been the first authority to describe the surgical anatomy of the mandibular tooth in its various inclinations and deflections and to define which part of the surrounding bone should be excised to facilitate its removal. Boyd S. Gardner appears to have been the first to apply to the third molar the operation, used in veterinary dentistry, of cleaving the tooth by a sharp blow with a chisel, the procedure being like that applied to the anterior teeth by our forefathers by means of cleaving (or splitting) forceps. Both techniques have their appeal, but it was not until Gardner demonstrated his method to me that I appreciated how easily and with what a light blow, if it is sharp and unhesitating, a large molar may be split. I have developed a technique modified to my own requirements, which owes its origin to these two American dental surgeons. Briefly, this consists in a radiographic examination and an insistence upon approaching the operation as one of some severity. As far as I have seen them, the failures, some of which have ended fatally, have always occurred when the operator over-estimated his ability to complete the operation as a simple extraction, or under-estimated the physical resistance of the tooth—or the general resistance of the patient to the spread of infection following prolonged and sometimes rough manipulation.

As far as is possible I put all patients to bed and operate under intratracheal anæsthesia. I try to preserve a consistent technique and environment and with the same team in hospital and in private.

The stages of the operation are to expose the overlying bone, the field being kept clear by an aspirator manipulated by a second assistant, who, standing on the left of the patient, also retracts the cheek (in operations on the left) or the tongue (in operations on the right). With my left hand I grip the patient's jaw and with my right I place the chisel in position and am able to keep my eye on the edge of the chisel and the bone to be cut, while the first (trained) assistant does the malleting. When a sufficiency of bone has been removed to expose the crown only, the chisel is held tightly against the tooth (either crown or neck) in the place it is desired to cleave. A smart, but not heavy, blow, with the mallet is sufficient to split it. The crown is removed and the chisel held obliquely in an axial direction in the junction of the roots (if these are bulbous or bifurcated). A second tap is sufficient to split these and it is surprising with what ease each root may then be delivered into the cavity left by the crown.

Besides enabling the tooth to be removed easily and with much less excision of bone than would be necessary if the tooth were to be delivered whole, the operation protects the inferior dental nerve from traumatic compression, which must often occur when the tooth roots are in close apposition to it and the tooth itself is badly impacted. This would appear to be a common cause of the after-pain which is usually regarded as a necessary concomitant to this operation. Finally, like most other operations requiring digital skill, there is only one way to maintain a high standard of efficiency in the team and that is to keep it in practice by constant operating. On the assumption that the patient has an immunity to the organisms of the infection he harbours, but not necessarily to those introduced into the wound from extraneous sources, I regard both the careful cleaning and scaling of the teeth and the proper adoption of an aseptic technique as for any other operation as an essential feature. If this is done, the wound, which is clean and has in non-purulent cases been sprayed to free the cavity of bone debris, may be drawn together with a suture, so that healing takes place rapidly and a long series of troublesome irrigations and packings are avoided.

In conclusion, I wish to draw attention to an operation which consists in the early removal of the lower wisdom teeth (at a time when the crowns as determined by radiographic examination are just forming) in all those cases where it is apparent that impaction is probable. Between 8 and 10 years of age the third molars are lying close to the surface of the ascending ramus and may be enucleated with ease, rapidity, and no appreciable discomfort to the patient—certainly not so much as that entailed by the ordinary extraction of the second molar when erupted at 12 to 13—a routine procedure which is advocated by some authorities as a desirable prophylactic measure.

PARIS

(FROM OUR OWN CORRESPONDENT)

UNKNOWN CAUSES OF DEATH

THE report presented to the French Academy of Medicine by Auguste Lumière and Paul Vigne shows how faulty is the notification of the causes of death at the present time. More than that it suggests that the obsession of professional secrecy is leading to a growing lack of precision in notification. It has, for instance, become a common practice to give as the cause of death the final failure of the heart or lungs instead of the disease which caused it. Of four cases of cancer coming to their knowledge, one was notified as a death from septicæmia following operation. The second was reported as a death from cardio-pulmonary disease, metastases of the new growth having invaded the thorax. The third was ascribed to gastro-intestinal disease, the patient having suffered from cancer of the stomach. The fourth was labelled broncho-pneumonia from which the patient had suffered at the end. The death-rates in Lyons in the period 1922–1932 show that there has been little change in the total number of deaths, but while the deaths from tuberculosis have declined from 1430 in 1922 to 804 in 1932, the deaths from unknown causes in the same period have jumped from 1107 to 2825. The fact that the deaths from unknown causes have more than doubled in the period leads to a suspicion that the

decline in tuberculosis is fictitious. Mention of tuberculosis in a death certificate may not only attach an undesirable stigma to the family, but also involve it in additional burial expenses and in the discomforts of disinfection. In Marseilles in 1921 only 2·25 per cent. of the deaths were not attributed to any specific cause, whereas in 1932 this figure had reached 27·6 per cent. The law imposes professional secrecy on the medical profession whose leaders have of late been recommending its observation in death certificates. A suggested way out of this dilemma is to provide two death certificates on forms of different colours: one for the administrative services; the other, a confidential document, reserved for the medical officer of health.

INTRAVENOUS INJECTIONS OF ANIMAL CHARCOAL

In a recent communication to the Academy Prof. E. Saint-Jacques of Montreal drew attention to investigations conducted by himself on human beings, and inspired by the experiments of Prof. Coghlin of MacDonald College, near Montreal. The latter's material consisted of 738 animals suffering from various infections, from infective arthritis to puerperal fever, and treated by injections of animal charcoal. All recovered. One of Prof. Coghlin's collaborators, who had been suffering for 18 months from furunculosis following acute gangrenous appendicitis, was given a single injection which was followed by the permanent disappearance of the boils. The matter was now taken up by Saint-Jacques who has treated more than 100 patients and given more than 200 intravenous injections of animal charcoal. The material included 14 cases of acute puerperal infection, with or without retention of the placenta, five cases of pneumonia, three cases of acute cholecystitis, five cases of furunculosis, and a mixture of other ailments, all more or less serious. Every case coming to hospital was given this treatment without any selective discrimination, provided there was presumption of an infection. The only patient who died was one who suffered from tuberculous enteritis and an inoperable tumour of the rectum. The pain was relieved in acute articular rheumatism—an achievement which could not be claimed in the case of polyarthritis deformans. All the other patients recovered. The initial dose was 3 c.cm. of a 2 per cent. suspension of animal charcoal pulverised as finely as possible. In the most serious cases as many as six injections have been given to the same patient. A dose of 4 c.cm. has often been given without provoking a reaction, and Saint-Jacques contemplates increasing the dosage still further. As the piston of the syringe is apt to jam he recommends lubrication of this and the needle with liquid vaseline. No ill-effects have as yet followed the injections.

A NEW CITÉ MÉDICALE

The middle classes, the standby of many a medical practice, have of late developed a growing tendency to attend hospitals and dispensaries free of charge or at reduced fees. A plan is now on foot to provide these classes with an all-round medical service at a *Cité médicale et chirurgicale*. The site has already been chosen, and it is hoped that the municipality of Paris will surrender it on moderate terms. The scheme provides for 288 beds at a cost of 62,800 francs per bed. The proposed participation of the municipality in this scheme has given occasion for a discussion of its merits. It was pointed out that the younger surgeons and physicians on the staffs of hospitals are at present apt to be eclipsed by their seniors and to find themselves more or less without work. On the other hand, there are the middle-class patients requiring first-class treatment but unable to pay first-class fees. The proposed scheme, with its moderate scale of charges, would bring these patients and the younger generation of consultants in touch with each other, to their mutual benefit. It is however doubtful if the medical associations in Paris, composed as they are mainly of general practitioners without hospital appointments, will approve of the scheme.

MORE B C G STATISTICS

A recent report by Dr. Sotty to the French Academy of Medicine deals with 373 children born in tuberculous surroundings and in most cases not removed from them. B C G was given to 249 of them within six days of birth. The remaining 124 were not thus treated for various reasons and served as controls. During an eight-year period, beginning with 1926, the mortality from all causes was 5·22 per cent. for the B C G children and 11·29 per cent. for the controls. With the help of two dispensary nurses, the health of these children was investigated in 1933 when it was found that the tuberculosis morbidity was 3·61 per cent. for the B C G children, whereas it was 26·61 per cent. for the controls.

IRELAND

(FROM OUR OWN CORRESPONDENT)

REMUNERATION FOR ATTENDANCE ON THE CIVIC GUARD

THERE has been a good deal of discontent among country practitioners of recent years over remuneration for medical attendance on the Civic Guard. It was long the custom to offer the appointment of medical attendant to the dispensary medical officer of the district in which the Guard station was situated, and he was paid at a capitation rate of two shillings per man per month. This rate was fixed many years ago and did not cause much discontent when the Guard station was in the same town or village as the medical officer's residence. On the other hand it was clearly inadequate when each visit meant a journey of 20 or 30 miles, and it is true that many stations are situated in lonely and relatively inaccessible places. Moreover, policemen have the reputation of being rather exacting patients and demand frequent visits for trivial ailments. For disciplinary purposes also close medical supervision is required. Of late, the authorities of the Guard have occasionally adopted an alternative method of choosing a medical attendant which is regarded with disfavour by the profession. When a vacancy occurs an invitation is issued to several practitioners living in the neighbourhood of the Guard station for which attendance is required, asking each to state the fee he is prepared to accept for, respectively, visits to the station and attention at his residence. *The cheapest doctor is given the appointment.* It is needless to emphasise that the practitioner who values himself at the lowest figure is unlikely to be the most competent available. In some cases the individual Guards have so little confidence in the practitioner appointed that they choose to seek medical advice elsewhere at their own expense. In other cases the practitioner appointed lives at so great a distance that his services are only asked for in serious illnesses. It is understood that representations are being made to the authorities of the Civic Guard in the hope of having the system of medical attendance reconsidered and having grievances remedied.

MARIE CURIE HOSPITAL

NEW X RAY DEPARTMENT

SOME two years ago the board of management of the Marie Curie Hospital were told by their cancer research committee that even better clinical results might be secured if a modern deep X ray therapy plant were acquired and used in suitable cases to supplement radium treatment. At that time the house in Fitzjohn's-avenue adjoining the hospital was in private occupation and could only have been procured at a prohibitive price. Various plans for accommodating the plant in a large ward or in a new building in the garden were being reviewed when the death of the owner brought No. 4, Fitzjohn's-avenue into the market, and was acquired through the generosity of Dr. Elizabeth Courtauld and other donors and was adapted to its new purpose by Miss Elizabeth Scott, A.R.I.B.A., of Messrs. Scott, Chesterton, and Shepherd.

The new building, which provides nine additional beds and extra accommodation for nurses and maids, as well as rooms for consultation and radiological apparatus, was opened on Feb. 16th by the Duchess of York, in the presence of the French and Polish Ambassadors, the Mayor and Mayoress of Hampstead, and a representative gathering of the friends of the hospital. Lord Reading, chairman of the council of the British Empire Cancer Campaign, which has supported the hospital from its inception, presided.

Miss M. M. CHADBURN, M.D., chairman of the hospital, which is staffed by medical women, spoke of the encouraging results achieved during the last seven to eight years at this centre with radium. Nearly every patient had been greatly relieved, and some had been free from any sign or symptom of the disease for years and were, it was hoped, cured.

Careful records were kept and every patient was followed up after she left the hospital. This hospital was poor and was struggling for its life. The new apparatus had cost between £2000 and £3000, and as an example of the other expenses involved in its establishment Miss Chadburn mentioned that in order to protect the workers from injury during irradiation of patients the cubicles had to be lined with lead and the observation windows to be made of lead-glass, costing £5 a foot.

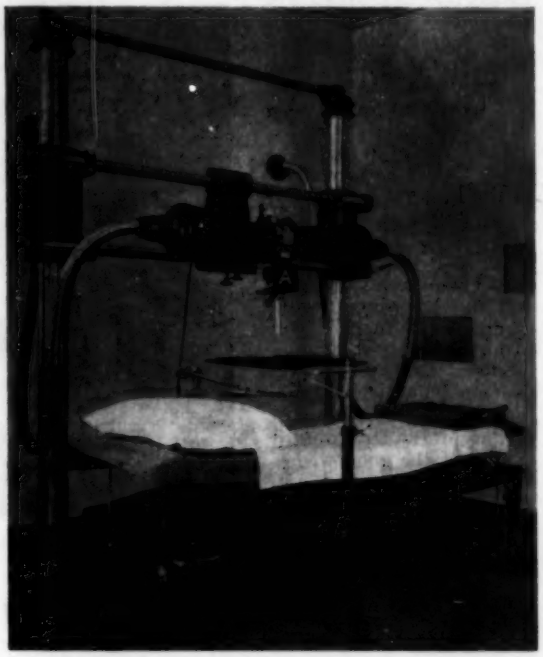


FIG. 2.—Adjustable treatment couch. Tube stand with 200 kilovolt shockproof metalix tube, fitted with light-focusing and direction-indicating apparatus (A).

The X ray plant had been made in England by an English firm, and she dared now say that it was very good, because it had been praised and admired, after investigation and examination, by Dr. Coutard and other experts. The provision of the X ray plant had made the hospital a very complete unit; but it also

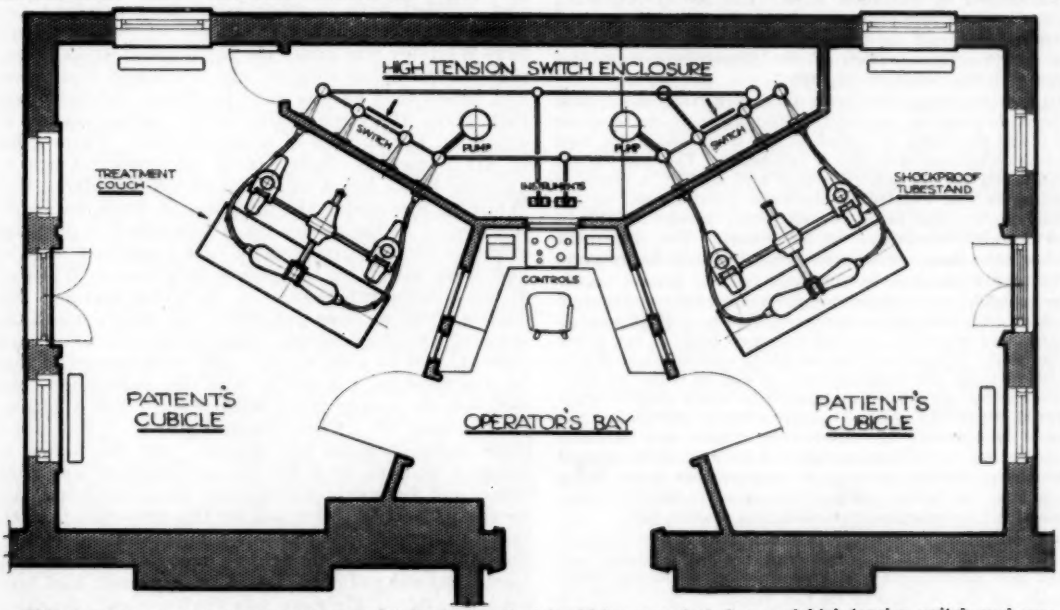


FIG. 1.—Plan of part of ground floor containing two patients' cubicles, operator's bay, and high-tension switch enclosure. Each cubicle has four windows, besides artificial ventilation and two radiators.

meant that its maintenance would cost about £2000 a year more than it had done in the past. Each patient who had to have full treatment would probably cost at least £30.

Lord READING said that those who had worked at the hospital had reason to be proud of what they had done. The problem they had tackled was a most complicated and difficult one, but cancer would surely yield in the end to human interest, human intellect, and human skill expended in such a generous manner as it was in this hospital. Dr. Coutard expressed the good wishes of the Fondation Curie, referring to the valuable research work being done by Dr. E. Hurdon, the director, and Dr. H. Chambers, the pathologist to the hospital; and Mrs. Walter Runciman thanked the Duchess of York for her visit in graceful terms.

FIG. 3.—Lead-lined control cubicle showing switchboard, ampere and milliampere meters, and lead-glass observation windows.

THE NEW DEPARTMENT

The X ray apparatus for deep therapy manufactured by Newton and Wright Ltd. comprises a high-tension unit designed for voltages up to 300,000, feeding two X ray tubes mounted on "Gantry" type stands. The department, which is on the ground floor, is very conveniently laid out. The operator's bay is shaped like a truncated "V," with a treatment room on either side and a desk pattern control table in front. High-tension measuring instruments are mounted at eye level in an enclosure immediately beyond the control table. Two patients, the instruments, and the control panel are therefore under observation from a central position. The treatment rooms are light and airy, having good natural ventilation, supplemented by extractor fans. The X ray tubes are shockproof and self-protective, and there is no exposed high-tension circuit in either of the rooms; consequently there is no contamination of the atmosphere from this source and no collection of dust.

An optical system has been developed from the system of light focusing in use at the Fondation Curie to assist in defining the beam of radiation. A beam of light is used which is coincident with the X ray beam. This light beam is cut down to the desired shape and size by a series of diaphragms and located in the right position and at the correct angle. The beam is sufficiently intense for this to be done without darkening the room. The treatment couches have been specially designed to carry diaphragms.

The high-tension generating unit itself is housed on the lower ground floor, and conductors are brought up through the floor into the high-tension enclosure. High-tension switches are provided so that either or both X ray tubes can be used. If two patients are being treated for different periods of time, the radiation can be cut off from one tube by means of an electromagnetically controlled shutter operated from the control panel without disturbing the other. Integrating ionisation instruments are provided for indicating the radiation received by each patient, and interlocking devices prevent the apparatus from being run unless the water-cooling system is in operation and switch it off automatically should this system fail.

The control of kilovoltage is effected by a new form of stepless regulator which is free from moving contacts and avoids any tendency for the production of surges when bringing up the voltage to its full value.

The hospital now contains 31 beds, including 8 for private patients at fees ranging from 5 to 15 guineas a week, excluding surgeon and anæsthetist.

MEDICINE AND THE LAW

The Medical Practitioner at the Police Station

JUDICIAL comments last week at the Liverpool Assizes showed how easily the doctor summoned to the police station may find himself entangled in divided loyalties. A Warrington lorry-driver named Whiteley was standing his trial for the usual trio of serious motoring offences—manslaughter, being in charge of a motor vehicle while under the influence of drink, and dangerous driving. He pleaded "not guilty" to all three. The prosecution alleged that he had collided with another lorry after drinking two bottles of beer at a hotel. Police officers considered that Whiteley was under the influence of drink; they sent for the police surgeon who confirmed their view, and added that he was unfit to drive. Whiteley was then given the opportunity at the police station of obtaining the opinion of a local doctor. From a list of six names he chose Dr. A who was fetched to examine him. Dr. A said that he too considered that Whiteley was under the influence of drink and unfit to drive. At the assizes Dr. A was called to give this evidence for the prosecution. He explained that he had been asked by the police to examine Whiteley at the latter's own request in the police station. Mr. Justice Swift at once put questions, which raised the issue of the confidential relationship of doctor and patient. "Who paid you?" The witness replied that he was paid by the police who, he understood, had received the money from Whiteley. "Was Whiteley your patient?" "Yes," replied Dr. A. "Is it not a little unfair," asked the judge, "for the police to invite a man to send for his own doctor, who then comes and gives evidence against him after being paid by the patient?" Counsel for the prosecution intervened to suggest that this was a matter for the doctor; the court, however, thought it might be even more a matter for the patient. Dr. A, it appeared, had been paid 10*s.* 6*d.* "He gave you that money," repeated the judge, "to examine him and you give evidence

against him." Dr. A explained in the witness-box that he thought Whiteley's condition was due primarily to drink and secondarily to the accident; the police had asked him to write out a report. Mr. Justice Swift said the least the police could do was to give Whiteley back his half-guinea; it was making an accused person pay for a second police report. The jury found Whiteley "not guilty" of manslaughter. They stopped the case as regards being in charge of the lorry while under the influence of drink. The prosecution, having failed on the major matters, offered no evidence on the charge of dangerous driving, and Whiteley was discharged.

The case shows how easily a doctor can place himself in an ambiguous position in the police station. He has to make up his mind whether he is called in by the patient or by the police. If called in by the patient, the doctor owes his patient the normal professional duty of not lightly betraying his confidence. The doctor may think his patient is drunk or under the influence of drink. If so, and if the doctor finds his way into the witness-box, he may be compelled (should the judge insist, which the judge is by no means certain to do) to answer questions as to the facts; at any rate if he refuses to answer he may conceivably be committed for contempt of court. He should certainly make his protest before answering. And he should certainly avoid the semblance of appearing as a police witness, when he is not—for example, by writing a report about his patient for the information of somebody else. The police, who are not necessarily well instructed as to professional ethic, may easily place him in a false position.

Drunkenness and Consent to Examination

If, on the other hand, Dr. A came to the conclusion that he was called in by the police and not by the patient, there is a fresh pitfall, which indeed awaits the police surgeons themselves. Some observations in a subsequent case before Mr. Justice Swift at Liverpool seem here to have created almost a deadlock in the administration of criminal justice. A commercial traveller named Tunnicliffe had been acquitted at the previous assizes at Manchester of the offence of manslaughter (another motoring fatality), but was now being tried for the lesser offences of (1) being in charge of a car while under the influence of drink, and (2) dangerous driving. Policemen gave evidence that Tunnicliffe was under the influence of drink and was unfit to drive a car; Dr. B, the police surgeon, gave evidence to the same effect. The judge asked Dr. B by what right he examined the accused. "He was told," replied the witness, "that I was a police surgeon and he expressed no unwillingness." The judge expressed surprise that a witness should say he examined somebody and put him through various tests and should then, finding him too drunk to understand what was going on, certify him as drunk. "I know of no right to do such a thing." Prosecuting counsel submitted that Dr. B had certified Tunnicliffe only as being under the influence of drink to such an extent as to be incapable of having proper control of the vehicle. "Yet so free from drink," rejoined the judge, "as to consent to having evidence prepared against him; this doctor was called in for the purpose of giving evidence against this man and then says he consented to it; it seems to me to be entirely wrong." Swift, J., made it clear that he was not suggesting that the police surgeon had done anything improper; he was merely pointing out the dilemma of the police. "The police are entitled to ask a doctor to come and observe a man they have got in the cells, but they have no right whatever to put him through tests unless he consents. If they say that he was so drunk that he did not know what he was doing, then they have no business to put him through tests." It was suggested by counsel for the prosecution that if the accused answered the tests he would at once go free. The judge had the last word. "I object to these inroads on British freedom; the police have no right to apply tests to a man like the prisoner without his consent; if they say he is able to give consent then they have no business to come here and say he is drunk, because drunkenness destroys consent." The jury stopped the case. Tunnicliffe, like Whiteley, was found "not guilty" and was discharged.

Mr. Justice Swift was evidently impressed by a previous incident at the same assizes. A little girl was alleged to have been criminally assaulted and defending counsel applied for an order that she be medically examined. The judge explained that he had no power to make the order. If the judge himself had no power to direct that the chief witness for the prosecution should be examined in the interests of the defence, what power could the police sergeant at the police station have to order the accused to be examined in the interests of the prosecution? While it would be misleading to over-emphasise the dicta of a judge who, as is his duty, takes all possible points on behalf of the defence, the principle will unquestionably hamper the prosecution of motorists at a time when public opinion seems to demand a stiffer enforcement of the obligation to drive with proper care. If the motorist at the police station consents to be examined, medical evidence of his intoxication may now be ruled out as inadmissible, the medical examination of a drunken man being illegal. The police surgeon, of course, will still be able to express the significant opinion that the accused was not in a condition to give consent, and doubtless a strong prima facie case of drunkenness may often be made out without handling the accused or putting him through standard tests which are not always conclusive.

These judicial dicta confirm a view submitted in these columns not long ago. There have been suggestions that, where a motorist is suspected of having been under the influence of alcohol, scientific examination of a single drop of his blood would be of conclusive evidential value. There have been suggestions also of a compulsory blood test in forensic disputes over paternity. The layman may take the refusal of the prospective examinee as a confession of guilt. The law thinks otherwise. Silence on the part of an accused person when taxed with a crime has been held not to be necessarily corroboration of evidence against him, where corroboration is by law required. An accused person is not obliged to furnish the prosecution with evidence. In particular crimes, where there is an element of special difficulty in proving guilt, the law has relaxed the ordinary safeguards and has made things harder for the defence. Thus in coinage offences, evidence may be given of previous convictions for similar offences—a remarkable breach with the usual traditions of British justice. Dying declarations may be admissible in murder cases; how otherwise would the Crown be able to prove some important accusation by the murdered person who best knows who struck the blow? And in the Official Secrets Act there is a little-known but far-reaching power for the police to exact information from all and sundry. If Parliament thinks something must be done to procure more convictions in motoring cases, some similar power may be conferred on the police with regard to motorists and medical examination. At present it does not exist.

CORRESPONDENCE

THE RELIEF OF RENAL ŒDEMA

To the Editor of THE LANCET

SIR,—The post-graduate lecture by Prof. Arthur Ellis on the treatment of nephritis published in your issue of Feb. 17th, calls for certain comments. Close observation of his words suggests that certain ambiguities have arisen through the limitations imposed by space, but even with this reservation Prof. Ellis exaggerates when he describes the measures adopted for the relief of renal œdema as "a ridiculous array." For most of the remedies he names there are, in certain readily defined circumstances, logical and scientific indications in that many of them have definite diuretic effects, others prevent the retention of water in the tissues, and others are logically directed to the removal of the cause of the disease responsible for the œdema.

In later sentences of the same paragraph Prof. Ellis suggests that rest in bed alone, perhaps combined with the progress of time, is responsible for the relief of œdema in the majority of cases. I feel it necessary to record that this doctrine has, in my own experience, been responsible for the loss of two lives. Some years ago, having been told that the œdema of nephrosis invariably disappeared with rest in bed, I deliberately withheld treatment from two cases which were admitted under my care with extreme œdema. Both developed pyrexia and signs of infection within a week and died from the infection in a few days. Had I adopted steps for the immediate alleviation of their œdema I am convinced that this would not have happened.

Whilst I agree with Prof. Ellis that many cases of renal œdema improve and even get well without special treatment of the symptom in question, I strongly disagree with the implications in his article that treatment of this symptom is very seldom necessary and that the remedies are of unproved value. Without accepting the premises of the school of Widal as to the rôle of salt in nephritis, I am certain that salt restriction and the diminution of the salt-content of the body as a whole are methods of relieving and preventing œdema which have proved effective in not a few but in thousands of cases.

Again, in certain obstinate cases the use of Salyrgan will produce diuresis and the relief of chronic œdema in a manner which would have seemed miraculous ten years ago. Last week I saw again a patient who for over 15 years has exhibited the nephrotic syndrome; that is to say she has a heavy albuminuria, very low plasma proteins, and a high plasma-cholesterol, with no sign of nitrogen retention, alteration of the blood pressure, or retinal changes. The urea clearance is within normal limits. For some years now this patient has never been quite free from œdema, but the least carelessness in the use of salt is immediately followed by an increase in the swelling. She leads a sedentary life but is able to get about, although if she sits very long in a fixed position, for instance at the bridge table, she will have to massage her knees before she can straighten them and walk. In the spring of last year her œdema became much worse and she was bedridden for over a month until her doctor, at my suggestion, gave her injections of salyrgan with such immediate effect that she was able to resume her ordinary life in a few days.

I find myself in such complete agreement with the greater part of Prof. Ellis's article that it is with some regret that I find myself obliged to make these comments, and I only do so because I feel it desirable that practitioners should know that effective remedies for œdema are in existence, even though it cannot be claimed that they are applicable in every case or that they are yet perfect in their nature.

I am, Sir, yours faithfully,

T. IZOD BENNETT.

Harley-street, W., Feb. 17th, 1934.

THE BARBITURATES

To the Editor of THE LANCET

SIR,—Those of your readers who are interested in arriving at the truth, that is to say, all of them, will welcome Dr. Gillespie's critical and eminently fair article which gives us a collection of facts and destroys a series of "bald and unconvincing narratives." The extraordinary publicity to which this controversy had attained has achieved its crown in the medical press by the term "Battle of the Barbiturates," and in the lay press by an anxious patient's seeking deliverance from his doctor through the agony columns of a reputable newspaper. It is perhaps unfortunate that the word "battle" has been employed, for it suggests that the opposing forces are more interested in gaining their point than in arriving at the truth—a state of affairs which, of course, we all know to be inconceivable. But, if we are to avoid a repetition of deplorable strife over any fresh group of hypnotics, we must exercise care not to refer to deaths from this or the other drug without giving full particulars of the attendant circumstances. We have, for instance, heard of deaths from nembutal poisoning. But where? When? How? Why this avoidance of detail? If these deaths took place in an institution, it is clearly the duty of its authorities to see that the medical profession should be informed in the usual way. There was no secrecy with regard to thallium acetate deaths. Why apply it to the unfortunate barbiturates?

We should all welcome more stringent control of the sale of these drugs, but that can be obtained without scare headlines. Publicity will but divert suicides from the gas oven, which is a danger to others, and the æsthetically revolting "jumping from high places," to the comparative comfort of barbiturates. In the meantime, the life of the practitioner will be made yet harder by virtue of the public's inculcated fear of the drugs, and the irrelevant interest which may be created in the mind of a jury.

I am, Sir, yours faithfully,

A. H. DOUTHWAITE.

Harley-street, W., Feb. 19th, 1934.

To the Editor of THE LANCET

SIR,—Perhaps the experience of one who witnessed the advent of the barbituric-acid group of drugs about 40 years ago, and who as a physician has prescribed them since fairly frequently, may be of some use in the present controversy. It was nearly 40 years ago that I, in my capacity then as official toxicologist to the Home Office, was called into consultation in the case of a young woman who had taken 200 grains of veronal, which at that time was, I believe, the largest dose of that drug that had been taken. She remained in a state of profound coma for 48 hours, but eventually made a complete recovery. In subsequent years I was called to a few similar consultations, but no death resulted and no bad after-effects could be detected either by the practitioners or by myself, although the cases were carefully followed up.

The witnessing of these accidents from the misuse

or abuse of a drug did not deter me from endeavouring to ascertain whether in these barbituric-acid compounds we had reliable and safe hypnotics provided they were properly used. I write now from an experience of their use extending over nearly 40 years, the result of which has convinced me that in the barbituric-acid group we have hypnotics which, when suitably administered, are amongst the safest with which I am acquainted. Sir William Willcox refers to the harmfulness that may result from the "repeated daily use of these drugs." If by that expression he means addiction extending over several months then I agree that harm undoubtedly may result, just as it would with many other drugs so taken. By all means let self-dosage with these drugs, as with all other hypnotics, be guarded against by having prescriptions for them marked to the effect that they are not to be repeated unless on the order of the prescriber, and I should also like to see the stoppage of their sale to members of the public unless ordered in a prescription.

It is with great regret that I have to differ publicly from the opinions of my old friend and former colleague, Sir William Willcox, but in view of his severe condemnation of the barbiturates I feel it to be my duty to place on record my opinion that in some of those drugs, when suitably administered, we have one of the great gifts that have been offered to suffering humanity.—I am, Sir, yours faithfully,

Limpsfield, Feb. 17th, 1934. ARTHUR P. LUFF.

To the Editor of THE LANCET

SIR,—In your last issue a letter from Sir William Willcox gives the records of the Registrar-General for deaths from barbituric-acid poisoning for 1931 and 1932 as 24 and 32 respectively. It may be of interest to put on record the number of cases of barbituric-acid poisoning which have passed through my hands during the last 12 months, namely, February, 1932, to January, 1933, inclusive. These number 22, of which 8 were fatal and 14 non-fatal. Of the recovered cases many were seriously poisoned, but some were less severe. All required treatment.

I would observe that the Registrar-General's returns are for various reasons minimum numbers and of course non-fatal cases are not mentioned. Realising that the number of cases that have passed through my hands represent only a small proportion of the total cases occurring in London, and with one exception do not account for any which have occurred in the provinces, one is forced to the conclusion that the incidence of this type of poisoning is seriously on the increase.—I am, Sir, yours faithfully,

G. ROCHE LYNCH.

Department of Chemical Pathology, St. Mary's Hospital, W., Feb. 19th, 1934.

To the Editor of THE LANCET

SIR,—Sir William Willcox is not alone in having respect for the work of Sir Frederick Mott, but, knowing the latter as I did, I feel certain that he would have fairly met any challenge that was made on his work and if he found it at fault or open to wrong construction he would have admitted it. Sir William now falls back on the clinical evidence of the toxic effects of the drugs in question, when administered daily. He recites a list of physical signs and some mental symptoms, and then sums up by saying "these symptoms have been observed by myself in a considerable number of cases and have become common knowledge." This does not mean that they are common experience. He has been fortunate or unfortunate in seeing physical signs which are rarely seen by others. Indeed, the complexes which he recites are relatively so uncommon as to merit detailed publication.

I can assure Sir William that what he calls details of the case, when he describes a case of chronic poisoning following daily therapeutic doses, shows such economy of language as to leave the reader almost entirely in ignorance of the nature of illness from which a person is suffering. On June 4th, 1927, he writes :—

"On Feb. 21st, 1921, a married woman who had taken forty 5-grain Medinal powders was seen by me. The patient had been taking a daily dose of 5 grains of medinal over a long period, on the prescription of an eminent physician. This culminated in her taking forty powders at once, with fatal results."

For anyone who has had such long experience in weighing and the giving of evidence this is a remarkable statement. Is therapeutic treatment in clinical medicine to be restricted just because some persons may have an idiosyncrasy to a drug, or because they have taken a large dose and they have some reaction to a drug which others persons would not exhibit? Personally I do not advise large doses, as I have learnt by experience that the small dose long continued is more successful in bringing about recovery. Sir William Willcox condemns both methods, and advises that these drugs should be given intermittently—a method I tried about 30 years ago and gave up because the results were unsatisfactory. May I ask Sir William whether he treats his epileptic patients in this way, and, if so, whether he finds that they quickly relapse? Surely what is true of one may be equally true of other conditions.

Sir William Willcox regards the barbituric-acid group as primarily hypnotic in action. But is this so? A patient given 5 grains of medinal early in the day will usually not want to sleep until night, and then sleeps well. Owing to the dread that many patients have of taking a so-called sleeping draught, this may be the only method of treating his insomnia. My work for many years has been largely directed to the prevention of mind disorder, and it is here that I see that difficulties must arise if Sir William's advice is followed. He seems to wish us to regard all our patients as potential suicides. I again repeat that it is many of those whose sleep has been ineffectively treated that tend to come into this group. I am surprised to read what he says about the frequency of deaths from the barbituric-acid group during the last few weeks. Surely the reason for this sudden rise must be obvious to him, as it must be to anyone who has any knowledge of the psychoneuroses.

I am sorry to read from one so distinguished as Sir William Willcox that, although he admits that "the barbituric-acid group of drugs are efficient and certain hypnotics and have their place in therapeutics," he does not prescribe them, partly for the sake of example to those medical students who follow his teaching. If he succeeds in his teaching then these students will not use certain hypnotics which "have their place in therapeutics." Would it not be far better to teach students how to use them properly?

I am, Sir, yours faithfully,

MAURICE CRAIG.

East Preston, Sussex, Feb. 17th, 1934.

To the Editor of THE LANCET

SIR,—Sir William Willcox, replying to Sir Maurice Craig, alleges that my statement showing the number of suicides attributed to the barbiturates in the Registrar-General's returns was "somewhat misleading." I had quoted these statistics as being very heavily against Sir William's assertion that the

barbiturates are a cause of suicide. He would like however to add deaths returned as accidental as he evidently regards many such cases as suicidal. For the purposes of this discussion I agree with this addition and shall also include the official barbiturate suicide rate at its maximum in the past six years. These additions together raise the barbiturate suicide rate from one quarter of one per cent. to two thirds of one per cent. of the annual total of suicides. It does not require even an elementary knowledge of statistical methods to see that this leaves the argument precisely where it was before.

As Sir William would also like the attempted suicides such as the 18 he mentions to be brought into consideration to rescue him from his difficulty, I would point out that, while the annual suicide rate is over 5,000 a year from all causes, the number of attempts annually reported to the police is in the vicinity of 2,500. There are also a great many more which are not reported to them. There is no reason to suppose that the proportion of barbiturate to other methods is significantly different among them from what it is among the actual suicides—unless of course Sir William Willcox would like to adduce the argument that the barbiturates are less efficient means of suicide than most others.

I am, Sir, yours faithfully,

R. D. GILLESPIE.

Wimpole-street, W., Feb. 19th, 1934.

A COMPARISON WITH ALKALI POISONING

To the Editor of THE LANCET

SIR,—In the third round of the Battle of the Barbiturates Dr. T. A. Ross very truly remarks that "all clinicians have been aware for a long time that care was essential in the administration of any drug for any condition." In 1923 Hardt and Rivers described two fatal cases of alkalosis resulting from the treatment of duodenal ulcer by Sippy's method. In 1925 a patient of mine with incomplete pyloric obstruction caused by a duodenal ulcer died in coma from alkalosis following the administration of large doses of alkalis, and a fatal case was reported by Cooke in 1932 from the medical unit of St. Thomas's Hospital. It is now recognised that therapeutic doses of alkalis, of which sodium bicarbonate is for its weight the most poisonous, frequently produce a variety of symptoms as a result of alkalosis, this being accompanied by a rapid rise in blood-urea to between two and six times the normal figure. Anorexia and depression are always present from the first. The patient then becomes irritable, introspective, and nervous, and complains of difficulty in taking his feeds. After a time headache, nausea, and vomiting occur. The character of the symptoms often results in their being regarded as purely nervous in origin until at last the patient may become apathetic and drowsy, and finally comatose, the coma being sometimes preceded by tetany or general convulsions.

In common with Dr. J. A. Ryle and Dr. T. L. Hardy I have seen several cases in which a diagnosis of alkalosis was made only just in time to save a patient's life. As the possible danger of over-dosage with alkalis is still almost unknown, there can be little doubt that numerous fatal cases have occurred in which the coma has been attributed to uræmia or some other cause.

"My contention is that the repeated daily use of the drugs over long periods is dangerous and harmful in some cases, and may lead to alarming nervous symptoms and risk of fatal poisoning from accidental overdose. The risks are so very real that not only the public but the medical profession need a warning as to the possible dangers of this group of drugs, since new combinations are daily appearing on the market accompanied by glowing statements as to their safety."

Except for the substitution of the word combinations for derivatives, the last paragraph is a quotation from Sir William Willcox's letter on the barbiturates in your issue of Feb. 17th. Alkalis have probably caused more deaths than barbiturates, but there have been no inquests, no interviews, and no publicity. In the case of the barbiturates Sir William does not prescribe them for the sake of example to his medical students, and he adds that the safety of the public can be ensured by some modification in the existing Pharmacy Acts. It would be just as reasonable for me to refuse to prescribe sodium bicarbonate and other alkalis for the example of my students and to suggest that sodium bicarbonate and the other alkalis should be added to the list of dangerous drugs. It seems to me unfortunate that because an overdose of barbiturates can cause death, students should learn nothing about the use of luminal, which is the most valuable drug we have for the treatment of migraine and Ménière's syndrome, and which is at least as valuable as bromide for epilepsy; or of medinal, which in my experience is the best of all hypnotics and has never in many hundreds of cases led to addiction or any of "the complex of symptoms" described by Sir William Willcox. I have not used veronal as a hypnotic, but since Dr. Ryle told me about it several years ago I have found one or two capsules containing grs. 2½ of veronal and phenacetin a most efficient and pleasant preventive of sea- and air-sickness.

I am, Sir, yours faithfully,

ARTHUR F. HURST.

New Lodge Clinic, Feb. 19th, 1934.

P.S.—After reading Dr. Gillespie's paper in THE LANCET of Feb. 17th, from which it appears that many of Dr. Young's collection of cases of fatal poisoning with barbiturates were counted two or three times, her 133 "cases" being really 85 patients, it may be well to state that this case has already been referred to by me on three previous occasions as well as by Dr. Venables in his paper on Alkalosis in *Guy's Hospital Reports* for 1926; otherwise my one patient may be recorded as five cases by some future writer on fatal poisoning by alkalis.

To the Editor of THE LANCET.

SIR,—In a recent issue of THE LANCET (Feb. 17th, p. 337) on the "Alleged Dangers of the Barbiturates," one cannot help admiring the industry with which Dr. R. D. Gillespie has searched through the literature of published fatalities from barbitone poisoning. When we come to his conclusions drawn from such an article, however, there are ample grounds for legitimate differences of opinion. He denies:

(1) that the barbiturates are dangerous in therapeutic doses;

(2) that they are a ready and increasing means of suicide;

(3) that the use of barbiturates gives rise to addiction.

Basing my opinion upon clinical experience, I would beg emphatically to differ from Dr. Gillespie and to answer all three questions in the affirmative.

1. With regard to the danger of prolonged therapeutic doses, I have myself observed three cases of paralytic syndromes, of mesencephalitic, cerebellar, and spinal cord type respectively, following the chronic consumption of barbiturates in therapeutic

doses for hypnotic purposes. These cases were recorded in detail at a recent meeting of the Royal Society of Medicine on Dec. 12th, 1933, at which Dr. Gillespie read his original paper, but they have apparently escaped his attention.

2. With regard to suicides, the statistical records by the Registrar-General, as quoted by Dr. Gillespie, show 12 barbituric suicides out of 5147 in 1931, and 20 barbituric suicides out of 5743 in 1932. This looks as if the percentage of barbituric suicides were somewhere between 0·26 and 0·4 per cent. But these figures undoubtedly understate the true condition of affairs. Some cases of suicide are camouflaged as accidental deaths. Other cases of attempted suicide, where lethal doses of barbiturates have been taken, are rescued by appropriate energetic treatment. Sir William Willcox tells us that during 1933 he has treated 18 cases, whilst I myself have treated 6 such cases within the last 7 months (3 of them in conjunction with Sir William Willcox). Details of some of these cases have recently been published in THE LANCET (Jan. 6th, 1934, p. 6). Others are contained in a joint paper by Sir William Willcox and myself, which has since been submitted to you.

Apart from personal experiences of this sort, the daily press in recent weeks has published a series of cases of suicide by barbiturate drugs. Only to-day (Feb. 21st) two barbiturate suicides are recorded on the same day, one at Battersea, the other at Eastbourne. The increasing frequency of barbiturate suicidal attempts, therefore, cannot be denied.

3. That the barbiturates sometimes give rise to addiction I stoutly assert. I know many cases in which the patient has taken a nightly therapeutic dose of a barbiturate for many years and finds himself unable to sleep without it. Some of your correspondents consider this an entirely innocuous habit, to which the stigma of drug-addiction ought not to be attached.

Much depends upon how drug-addiction is to be defined. To my mind, drug-addiction means a chronic condition of physical and mental abnormality in which the individual not only habitually consumes some special drug but also, if his particular drug is cut off, he hungers for it and finds himself unable to live his ordinary life (or in a case of a hypnotic drug, unable to secure his ordinary sleep) without grave discomfort and sometimes even with dangerous withdrawal symptoms. A degree of temporary euphoria or mental exhilaration whilst under the influence of the drug occurs in some forms of drug-addiction, but is not invariably present. Some drug-addicts—e.g., morphinists—do not become euphoric, but simply acquire a temporary alleviation of their misery or drug-hunger, requiring progressively increasing doses to attain this condition.

Some drugs such as tea, coffee, tobacco, &c., are relatively so mild in their symptoms of addiction that they rarely call for treatment. Others, such as alcohol and the morphine derivatives, are universally recognised as a serious menace to the patient's health. In which category are we to place the barbiturates? Sir Maurice Craig and those who agree with him regard them as almost innocuous in therapeutic dosage. Sir William Willcox, on the other hand, regards them so seriously that he does not prescribe them himself, because of the danger of their possible abuse. It seems to me that the truth lies between these two extremes. The fact that the barbiturates are powerful and potentially dangerous drugs need not prevent us from prescribing them with due care in suitable cases, just as we prescribe other powerful drugs. But it ought not to be possible for a non-medical individual to walk into a druggist's store, as at present, and to buy a bottle of barbiturate across the counter with no questions asked. Only last week I saw a patient who had thus secured 50 tablets of Sandoptal, a powerful barbiturate, with which she attempted suicide—and nearly succeeded.

I am, Sir, yours faithfully,

J. PURVES-STEWART.

Buckingham-street, S.W., Feb. 21st, 1934.

ADENOID AND TONSIL OPERATIONS

To the Editor of THE LANCET

SIR,—Mr. Denis Browne says that many general surgeons feel disinclined to hand their patients to the throat surgeon "once it has been decided upon" to remove the tonsils. It is this decision which is so important, and, whilst there must be many general surgeons who are capable of removing the tonsils completely and well, it requires considerable experience in the examination of the upper air-passages to eliminate conditions such as sinusitis.

One not infrequently sees patients who have had their tonsils removed, and whose symptoms persist. In many of these patients there is present on the posterior pharyngeal wall bands of lymphoid tissue which show that there is infection present in the nose. Had this condition been realised before, an unnecessary operation on the throat might have been avoided.

It is for this reason that these cases are better in the hands of those who are most qualified to make a complete examination of the nose and throat.

I am, Sir, yours faithfully,

Cheltenham, Feb. 16th, 1934. T. D. DEIGHTON.

A QUESTION OF NEGLIGENCE

To the Editor of THE LANCET

SIR,—In raising the perennial issue of the negligent panel doctor, Dr. Molloy must be aware that the case he mentioned is probably exceptional, and that a large amount of good work is going on quietly and unobtrusively under the panel system. The treatment of domestic servants is a thankless task at best, since, in sickness, the interests of mistress and maid are opposed. In the particular instance, the negligence was so gross that one cannot help wondering what the panel doctor was suffering from: was it overwork, callousness, avarice, or what? The answer is simple; he was suffering from pique. Neither he nor the panel system are altogether at fault for this; Dr. Molloy, himself, gives the reason; "(my friend) then sent for her own doctor." Why had she not done this at first?—because her own doctor was not on the panel. So she sent for another doctor to treat her cook; and "he knew, and she knew, and he knew that she knew, and she knew that he knew that she knew" that she considered him inferior. Hence his pique and his negligence.

Why is her family doctor not on the panel? Do not the poor need as good doctors as the rich? Is he too clever, or too much of a gentleman? Is he a snob, or does he merely defer to the snobbery of his patients? It matters little; there lies the rub. Pique is not a noble sentiment, but it is one from which nobody is altogether immune. "Who has a breast so pure, but some (unworthy) apprehensions keep leets and law days, and in session sit with meditations lawful?"

What is the remedy? Dr. Molloy is right in thinking

that a national medical service will not cure it: people cannot be made virtuous by Act of Parliament. Is it possible to raise the social esteem of the panel doctor to that of officers in the Navy, Army, or Air Force, by regarding him as a commissioned officer in the National Insurance Service? Not yet: the panel doctor has still to show himself worthy of this esteem, and this cannot be done by acts of negligence. Grudging service is bad service, and unless panel doctors are prepared to do *more* than is required of them by law, they are and will remain inferior doctors. Those panel doctors, and they are not few, who are doing their work conscientiously and with good-will, must for the present content themselves in the knowledge that "some kinds of baseness are nobly undergone."

I am, Sir, yours faithfully,

Westgate-on-Sea, Feb. 16th, 1934. FREWEN MOOR.

AN ESSAY IN SEX DETERMINATION

To the Editor of THE LANCET

SIR,—Some years ago it was suggested that the chemical reaction of the vaginal secretion at the time of coitus might influence the sex of the resulting child.[1]

It is now generally agreed that, in the human species, the spermatozoa are of two kinds—differing in the number of their chromosomes: one variety is believed to be potentially male, the other female. The human female ova are, of themselves, asexual. If an ovum is fertilised by a "male" spermatozoon, the resulting child is a son—if by a "female" spermatozoon it is a daughter. Work done in Germany and elsewhere seems to show that a relatively alkaline secretion favours fertilisation by the male spermatozoa, while an acid secretion favours fertilisation by the female, and this opens up the possibility of prearranging the sex of offspring.

In inquiring into this possibility we have collected information from a few women who were examined at frequent intervals over a period of several months, and also from others who were examined two or three times. We were of opinion that the reaction of the vaginal secretion would probably vary during the intermenstrual period—though this has been denied by some workers—and therefore it seemed desirable to make examinations in each case at different stages of the cycle. The details of the patient's life had to be ascertained—since obviously the use of douches and certain contraceptives will alter the secretion. The material for examination was collected from the vagina on a camel-hair brush and its pH determined by a micro-colorimetric method. Usually the reaction of the cervical secretion was also tested.

Tentative conclusions from the observations so far made may be summarised as follows:—

1. Variations in the pH of the vaginal and cervical secretions do occur, in most cases, during the intermenstrual period. The cervical variations are usually small and do not necessarily run parallel with the vaginal variations, which are often well marked.

2. The vaginal secretion is usually nearly neutral immediately after a period and as a rule becomes progressively more acid until the next period. It is important to note, however, that in some cases the postmenstrual neutrality may be replaced by acidity in a day or two, while in others the secretion is definitely acid after the period and remains so or becomes more acid.

3. We think it probable that variations in any one person tend to be constant under uniform conditions.

4. The vaginal reaction may be modified by local treatment and, owing to a flow of alkaline secretion from the cervix, by sexual relations.

5. It is likely, as certain German workers have stated, that the different types of variation in reaction are associated with different vaginal bacterial flora; but we do not think that, for our purpose, any classification on these lines would be helpful. Rather would we emphasise that each case must be treated individually, since the nature and the amount of secretion present are also of importance and these depend on pathological lesions, sexual life, and hygiene.

If information is sought on the prearrangement of sex, advice may be given on the acid-alkali assumption, but it must be pointed out that results cannot be guaranteed; and if any useful advice is to be given, preliminary investigations must be made. At least three examinations are required, at various times during an intermenstrual period, and while they are in progress there should be no intercourse and, of course, no douches. In this way it may be discovered when the natural secretion is most advantageous for the sex desired, and appropriate treatment and times of coitus can be arranged accordingly. It seems probable that a medium which is either too acid or too alkaline will cause sterility. If the treatment is given by a douche, the time of the douching in relation to intercourse is important, depending on the nature and amount of natural secretion; the use of a douche of any kind shortly before intercourse often seems to prevent pregnancy. Local treatment by means of pessaries is, we consider, undesirable, for they do not always dissolve at the right time or uniformly with the secretion present in the vagina, and the usual bases of pessaries are inappropriate for the purpose.

Our work on these lines has not been long in progress and we are still awaiting a number of results. Two cases already delivered have been successful, and in view of the fact that other published results seem to deal exclusively with the production of sons, it may be worth noting that one of these produced a daughter, as desired.

We are, Sir, yours faithfully,

HAROLD TAYLOR,
GORDON KIRWAN-TAYLOR.

London, W., Feb. 17th, 1934.

[1] See THE LANCET, 1930, i., 475.

CARBON DIOXIDE IN GENERAL PRACTICE

To the Editor of THE LANCET

SIR,—During one single hour of general practice last week the value of carbon-dioxide resuscitation was very strongly brought home to me by three events: (1) a mother with respiratory failure under chloroform during an instrumental labour, (2) the child which required artificial respiration before it breathed, (3) as soon as I had returned to my house, a road accident in which a youth received severe multiple injuries through contact with a motor vehicle. When I arrived on the scene he was unconscious, almost pulseless, and his breathing nearly imperceptible. I applied a diluted carbon-dioxide-air mixture under a facepiece for a few moments while I examined him. His breathing and pulse improved, and he was fully conscious when he was loaded into the ambulance, although his injuries included broken ribs, a fractured shoulder, and a leg which was crushed from the thigh to the ankle.

I feel confident that many of our road fatalities are due to respiratory failure within the first few moments after the accident, which carbon dioxide, made available by a portable supply, might do much to prevent.—I am, Sir, yours faithfully,

Hemel Hempstead, Feb. 17th. GILBERT BURNET.

X RAYS IN BLEPHARITIS

To the Editor of THE LANCET

SIR,—At the joint meeting of the sections of ophthalmology and dermatology of the Royal Society of Medicine on Feb. 9th, I am reported (THE LANCET, Feb. 17th, p. 351) as having said that I had treated many cases of rosacea with X rays in small doses. X rays are used in some cases of rosacea, but my remark had reference to blepharitis, not to rosacea. Mr. J. Foster had said that X rays were used a good deal on the continent for the treatment of blepharitis, and had asked whether this treatment was used by dermatologists in this country. I replied that I had used X rays with some success in a number of cases of blepharitis sent to me by Mr. Cole Marshall.

I am, Sir, yours faithfully,

Harley-street, W., Feb. 16th. A. C. ROXBURGH.

ASCORBIC ACID FOR SCURVY

To the Editor of THE LANCET

SIR,—In your issue of Jan. 6th (p. 22) Dr. Elisabeth Svensgaard reports a case of infantile scurvy successfully treated with ascorbic acid, and refers to an earlier account (published in THE LANCET for Sept. 9th, 1933) of the cure of scurvy in an old man by the same means, communicated by Dr. Poul Schultzer. Dr. Svensgaard says of Dr. Schultzer's case that it is, as far as she knows, "the first cure of this kind reported in the literature." This claim, although literally accurate, is not historically so. The first case of scurvy cured with ascorbic acid was that reported by Prof. L. G. Parsons at a meeting of the section for the study of disease in children of the Royal Society of Medicine, held in Birmingham on June 17th last and published in the October number of the *Proceedings* of the Society.

I am, Sir, yours faithfully,

A. L. BACHARACH.

Glaxo Laboratories, London, N.W., Feb. 16th, 1934.

*** Examination of the two reports shows that Dr. Parsons admitted his patient to hospital on May 20th and treated her with ascorbic acid from the 22nd onwards; whereas Dr. Schultzer had his patient on a control diet from May 11th until May 23rd, when the specific treatment began. We are not prepared to say which was cured first.—ED. L.

DRIVING IN FOG

To the Editor of THE LANCET

SIR,—As the originator of the optical properties of Nebulite, to which reference is made on p. 383 of your issue of Feb. 17th, will you allow me to mention two points.

Your suggestion that motor lamps are overrun and that a resistance in series for foggy conditions would be an advantage have been investigated, with many other devices, during the three years of experimental work which preceded the production of nebulite. In the neighbourhood of the voltage at which most gas-filled lamps are run the candle power varies as the fifth power of the voltage. The temptation to overrun them is therefore very great, but the resulting enormous shortening of the life of the lamp is sufficient deterrent. My impression is that motor lamps are not loaded in excess of the established rating of domestic lamps. I have made spectro-photometric measurements of motor lamp bulbs over a considerable range of voltage and while I agree that a reduction of voltage reduces the energy distribution at the short-wave end of the spectrum it is very far from eliminating the light which produces back glare, and while the latter is only reduced to a small extent the general candle power of the lamp is reduced to a very large extent and consequently no benefit to the motorist is derived.

For the efficient elimination of back glare the absorption of the violet, blue, and the shorter waves of the green should be as complete as possible, and provided this is accomplished, the more light one can bring into operation the better. I have conducted many tests in both natural and artificial fogs, and I have found that with a lamp suitably placed in reference to the driver and fitted with a nebulite glass front, a 60-watt bulb may be used with advantage even in dense fog.

I am, Sir, yours faithfully,

A. H. STUART.

Avon-road, London, E., Feb. 17th, 1934.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

THE Admiralty announce that Surg. Rear-Admiral Robert W. B. Hall, C.B., O.B.E., has been appointed Medical Director-General of the Navy in succession to Surg. Vice-Admiral Sir Reginald St. G. S. Bond, K.C.B., K.H.P. The appointment will date from July next.

Surg. Lt. A. Long is transferred to Perm. List.

The following appointments have been made: Surg. Comdr. (retd.). R. N. W. W. Biddulph to *Cardiff*. Surg. Capts. G. G. Vickery to *Drake*, for R.N. Hospital, Plymouth; T. Creaser to *Ganges*, for R.N. Sick Quarters, Shotley; and W. H. Edgar to *Victory*, for Haslar Hospital.

ROYAL ARMY MEDICAL CORPS

Maj. G. R. Grant retires on retd. pay.

The undermentioned Lts. on prob. are confirmed in their rank: D. A. Beattie, W. H. Hargreaves, J. C. Reed, T. McG. McNie, W. F. L. Fava, L. G. Irvine, P. V. O'Reilly, T. D. Phelan, R. R. Prosser, J. Scott, J. Edis-Myers, T. K. White, D. W. Taylor (seconded), C. J. Hassett, S. G. O'Neill, F. J. Doherty, and J. W. D. Goodall (seconded).

Lt. B. F. B. Russell is restd. to the estabt.

TERRITORIAL ARMY

Col. G. L. Thornton, K.H.P. (Hon. Col. R.A.M.C., T.A.), retires on completion of tenure as A.D.M.S. 43rd (Wessex) Div., and retains his rank, with permission to wear the prescribed uniform.

Col. W. Lister retires on completion of tenure as A.D.M.S. 49th (W. Riding) Div., and retains his rank, with permission to wear the prescribed uniform.

Lt.-Col. and Bt.-Col. R. Ward, from Gen. List, R.A.M.C., T.A., to be Col., and is apptd. A.D.M.S., 43rd (Wessex) Div.

Lt.-Col. H. T. Bates, from Gen. List, R.A.M.C., T.A., to be Col., and is apptd. A.D.M.S., 49th (W. Riding) Div.

Maj. H. J. D. Smythe to be Lt.-Col.

Capt. and Bt.-Maj. F. R. Sandford to be Lt.-Col. and to comd. 128th (Wessex) Fd. Amb.

Capt. and Bt.-Maj. J. E. Rusby, M.C., to be Lt.-Col., and to comd. 146th (W. Riding) Fd. Amb.

Capt. J. D. Robertson resigns his commn.

Lt. J. K. Reid to be Capt.

TERRITORIAL ARMY RESERVE OF OFFICERS

Lt.-Col. and Bt.-Col. H. E. McCready, from retd. T.A., to be Lt.-Col. and Bt.-Col.

INDIAN MEDICAL SERVICE

Col. Sir R. McCarrison to be Maj.-Gen.

The undermentioned appts. are made: Lts. (on prob.): R. L. H. Minchin, W. G. Kingston, and R. de Soldenhoff.

BIRMINGHAM HOSPITALS AND SUNDAY CINEMAS.—The Birmingham Hospitals Council has agreed to the request of the justices to allocate £5500 from the cinemas, under the Sunday Entertainments Act, among the voluntary hospitals and nursing institutions of the city.

PANEL AND CONTRACT PRACTICE

Ethics of Consultation

THE central ethical committee of the B.M.A. has submitted a draft of new rules to bring medical consultation into line with modern conditions of practice. The first change suggested is to include in the definition of "consultant" the words "who, *with the approval of the practitioner* already in attendance, examines a patient . . . and coöperates in the diagnosis, prognosis, and treatment of the case." The words in inverted commas are new. Under the Insurance Acts a practitioner can ask for a consultation with one of the regional medical staff about a difficult case at any time if only the question of capacity for work is in doubt, and after a month if it is a question of treatment. When an approved society refers a case to the R.M.O. it is almost invariably on the question of capacity to work. The practitioner in attendance is then by his terms of service under obligation to provide a report of the condition found at his last examination and of the treatment given. This consultation can hardly be described as "with the approval of the practitioner already in attendance," and although now and then he may be grateful to the R.M.O. who discovers an abdominal tumour, or helps with some suggestion for treatment, the latter may often have reason to feel that scant attention is paid to his clinical suggestions and that there is little that can be called coöperation. In other respects the cases in which a consultation is especially required are not different in insurance practice from those outside it. The new rule (19), however, though it may not apply largely to insured persons, does raise the question of consultant status. This rule runs: "When a practitioner, *in whatever form of practice* believes that a patient who requests him to give advice or treatment is not under the care of another practitioner he is at liberty to do so." As this is nothing else than general practice why put in the words "in whatever form of practice"? A doctor cannot be in consultant practice and in general practice at the same time. If he is a general practitioner he may of course be called in by another general practitioner to see a patient for a consultation but that does not give him consultant status.

The suggested rules for medical inspectors, which are meant to include references under the Insurance Acts, are not changed from those originally laid down. The conditions are observed by the Ministry of Health in its instruction to the regional medical staff. The attending practitioner in all referred cases is given the opportunity to attend the examination centre to consult with the examining officer if he so desires. One of the reasons why he himself initiates so few references is that he can be required by the Ministry to attend the examination. This is not so when an approved society solicits the R.M.O.'s opinion, and by asking the society to put the reference through the practitioner can avoid this obligation. No criticism of the treatment of the case is made to the society nor does the Ministry encourage the R.M.O. to make suggestions about treatment to the attending doctor. In a case of myxœdema, however, the inspector might say: "I think some thyroid would probably do the patient good."

PUBLIC HEALTH

HOSPITAL NEEDS IN SURREY

A PROBLEM OF URBANISATION

AT their meeting on Jan. 30th the county council of Surrey had under consideration a report by Dr. J. Ferguson, county medical officer, stating categorically the need for more hospital accommodation in the mid-eastern area of the county. The Registrar-General's preliminary report on the census of 1931 revealed that the London area is growing at the expense of other towns, particularly those of South Wales and the North of England. This development has been accompanied by a drift of population from London itself to the neighbouring counties, so that the population of the county of London actually fell by 87,702 persons between 1921 and 1931, about twice as great a loss as in the previous decennium. Nearly a million had been added to the "Outer Ring," an increase of 25 per cent. Surrey took second place only to Middlesex in this expansion, its urban districts on the outskirts of London, exclusive of the county borough of Croydon, having increased in population by about 200,000. Included among these are towns in the Surrey portion of the old Croydon union which fall into the mid-eastern area and which have grown in the last intercensal period to the following extent: Beddington and Wallington, 61 per cent.; Coulsdon and Purley, 75 per cent.; Merton and Morden, 135 per cent.; and Mitcham, 62 per cent. The estimated combined population of these areas at the present time is 187,556, and it is expected to reach 218,712 by 1937. The number of persons living in the whole of mid-east Surrey is 358,469.

Growth such as this presents new and urgent problems of public health provision. So far as hospital accommodation is concerned there are at present 311 beds at Epsom, representing 0·87 beds per 1000, as against the rather conservative estimate of 2·5 per 1000 submitted as a requirement by Dr. Ferguson. On this basis 800 new beds are needed and the council have decided to erect a hospital of this size at St. Helier at an estimated cost of £500,000. The hospital is to be built in stages, the first section containing about 450 beds. It is suggested that provision be made on the one site for general medical and surgical cases, children (at least 60 beds), maternity cases, tuberculosis (a block for 50 patients), skin, ear, nose, throat, and eye cases, early mental cases, venereal diseases, infectious cases, and private patients. The two latter groups raise interesting speculations. If the hospital is to include blocks in substitute for an isolation hospital, the proposal is an enlightened one, but unusual in this country in modern times. It would increase the efficiency of administration of this type of hospital provision and add to the interest of the medical work and the scope of training for nurses. A sufficient number of beds, however, for such a population, if included in the initial 450, will materially reduce the accommodation for other diseases, and, in any case, the allocation of 2·5 beds per 1000 of the population is probably insufficient when beds for the zymotics are included. It seems more likely that the council have in mind isolation merely for septic and other infectious cases occurring in the ordinary course of general hospital routine.

The provision of pay-beds for private patients is one which ought to be welcomed, although in rate-aided institutions where all must pay according to their means, social classification of this kind may not

be entirely free from administrative and political complications. On the whole, it would appear to be better for such accommodation to be found by voluntary hospital managers. But, as we pointed out last week (p. 361), there are legal difficulties in that connexion also, as the governors of the Birmingham United Hospitals are finding. There can, at least, be no difference of opinion as to the need for provision of this kind.

It might be argued that the reshuffling of the population of Greater London calls for unification of local government and the avoidance of new hospital construction for the needs of those who have left areas where there may already be adequate provision. The question hardly arises in practice. Few areas can yet claim to meet their hospital requirements. Further, as already mentioned, the growth of Greater London is mainly at the expense of distant towns and the outward drift from the county of London is probably counterbalanced by the increasing demands of all sections of the people within its boundaries for hospital treatment.

Northern Ireland

The death-rate in Northern Ireland in 1932 did not, at 14·1 per 1000, differ appreciably from the general level of the last few years, but the birth-rate of 19·9 per 1000 was the lowest yet recorded, although it remains still the highest in the British Isles. Such investigations as it has been possible to make, the Registrar-General concludes in this report,[1] point to the fact that the registration of births and deaths in Northern Ireland is not complete, but that a number of each escape registration. It does not appear, however, that the defects are sufficient to affect materially the basic rates. On the other hand, he who would utilise some of the more detailed classifications of cause of death must obviously proceed with caution. For instance, the crude death-rate from cancer in Northern Ireland has been materially below that recorded in England and Wales for the last fifteen years, while comparative figures from the Irish Free State, quoted in this report, show that that area has been in a more enviable position still. Part of this difference may be due to differences in age-distribution of the populations concerned, but still more is likely to be derived from inadequate death certification. In 1932, of the total deaths registered in Northern Ireland 7·9 per cent. were not certified, there having been neither a medical attendant during the last illness nor an inquest held by a coroner. This percentage, it is true, has been steadily falling over the last ten years, and is now far below that quoted for the Irish Free State, which reached in 1932 the very high level of 19·5 per cent., but it is still sufficiently high to be of importance. In this report the Registrar-General has included a special abstract showing these uncertified deaths according to causes, ages, and sex. Two-thirds of them related to persons aged 65 years and upwards and roughly one-tenth to infants under 1 year of age. In the latter group the cause of death most commonly given belongs to the group congenital debility, premature birth, malformation, and the like; in the former the majority of deaths are ascribed to senility. This cause is not confined to the uncertified deaths but is of frequent occurrence amongst those medically certified, for in 1932 one-tenth of all deaths were ascribed to senility (compared with less than 4 per cent. in England and Wales), while the proportion rises to as much as one-third at ages 75–85 and to over one-half at ages 85 and over. In fact, from 1923 to 1932 "senility" has been the second most important cause of death in Northern Ireland, being exceeded only by heart disease. Such a position cannot inspire confidence in the death-rates from those diseases that have largely an old-age distribution, such as cancer, diabetes, bronchitis, and heart disease.

[1] Government of Northern Ireland. Eleventh Annual Report (1932) on Marriages, Births, and Deaths. H.M. Stat. Office. 2s. 6d.

Glasgow in 1933

A preliminary statement on the health of the city of Glasgow last year, issued by Dr. A. S. M. Macgregor, medical officer of health, seems to indicate that the prolonged industrial depression has not been reflected in any deterioration of health as measured by the mortality or the incidence of infectious disease. Deaths were at the rate of 13·4 per 1000 of the population as compared with 14·7 in 1932, the former being the lowest rate on record. Infant mortality fell from 112 per 1000 births in 1932 to 97, a rate which has been less in only one previous year, 1923, when it was 89. These rates are of course high in comparison with those for southern towns, but they are characteristic of the industrial cities of the north of England as well as the west of Scotland, and are probably dependent, in part at least, on other than sanitary circumstances. The decline in 1933 is attributed to the unusually favourable weather conditions of the year, and perhaps it was for this reason that the influenza epidemic of the first quarter of the year, which seemed at the time to be heavy in its incidence, was much less fatal than that of 1929. The number of deaths certified as being due to this cause in Glasgow was actually about half the number in the preceding year. On the other hand, the warm summer and autumn ought to have been conducive to infantile diarrhœa, but the number of deaths under 2 years of age from this cause was only 319, as against 385 in 1932. Scarlet fever, as in many parts of the Kingdom, continued to be high in prevalence but very mild in type. Generally, mortality from the zymotics was lower than in the previous year, except in the case of whooping-cough which occurred in one of its biennial waves but with apparently low fatality.

One of the most notable features of the Glasgow vital statistics has been the decline of tuberculosis, which has been almost continuous and more rapid during the last ten years than in many other large towns in England and Wales, although this experience has been shared by other Scottish towns. The death-rate of 890 per million from pulmonary tuberculosis for 1933 has only once been bettered and that of 246 per million from non-pulmonary forms of the disease is the lowest on record. In contrast, the mortality from cancer, heart disease, and arterio-sclerosis is rising in Glasgow as elsewhere.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED FEB. 10TH, 1934

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 16 (last week 8); scarlet fever, 3263; diphtheria, 1391; enteric fever, 23; acute pneumonia (primary or influenzal), 1654; puerperal fever, 49; puerperal pyrexia, 123; cerebro-spinal fever, 24; acute poliomyelitis, 4; acute polio-encephalitis, 1; encephalitis lethargica, 10; relapsing fever, 1 (Norton R.D., Derbyshire); dysentery, 19; ophthalmia neonatorum, 97. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Feb. 13th–14th was as follows: Small-pox, 30 (last week 36); scarlet fever, 1962; diphtheria, 2025; enteric fever, 7; measles, 1807; whooping-cough, 335; puerperal fever, 29 mothers (plus 10 babies); encephalitis lethargica,

260; poliomyelitis, 4; "other diseases," 170. At St. Margaret's Hospital there were 16 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 77 (22) from measles, 9 (0) from scarlet fever, 38 (16) from whooping-cough, 63 (17) from diphtheria, 47 (12) from diarrhœa and enteritis under two years, and 73 (17) from influenza. The figures in parentheses are those for London itself.

The number of deaths from influenza has not altered appreciably during the last three weeks, averaging 70; the 512 deaths during the first six weeks of the year compare with the 8440 deaths for the corresponding weeks of 1933. Seven deaths were this week attributed to influenza at Birmingham, 4 at Liverpool (and Glasgow), 3 each at Leeds, Southport, Coventry, and Stoke-on-Trent, no more than 2 in any other great town. Ten fatal cases of measles occurred at Liverpool, 8 at Leeds, 7 at Manchester, 5 each at West Ham and Middlesbrough. Whooping-cough was credited with 5 deaths at Liverpool and 4 at Birmingham. Of the fatal cases of diphtheria 8 occurred at Hull, 5 at Liverpool, and 4 at Leeds.

The number of stillbirths notified during the week was 252 (corresponding to a rate of 37 per 1000 total births), including 35 in London.

OBITUARY

ARTHUR H. N. LEWERS, M.D., F.R.C.P.Lond.

WE regret to announce the death of Dr. Arthur Lewers, a well-known obstetrician some 20 years ago, which occurred on Feb. 9th at his residence, Sussex Gardens, Hyde Park, London, after a long illness.

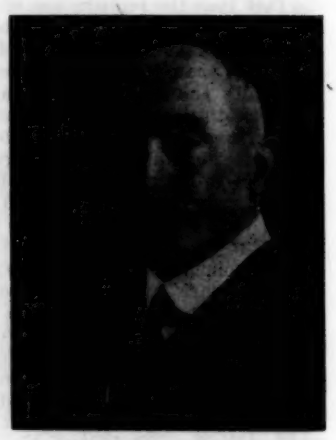
Arthur Hamilton Nicholson Lewers was the son of William Lewers, an Irish barrister, and was educated at Winchester, proceeding to University College Hospital for his medical courses. He was a distinguished student and obtained the University scholarship in obstetric medicine in the M.B. examination in 1884, and qualified as M.D. in the following year, also with honours. He was for a period resident obstetric assistant at University College Hospital, where the late Sir John Williams was obstetric physician, but in 1892 was appointed obstetric physician to the London Hospital, his senior colleague being the late Dr. G. E. Herman.

As obstetric physician to the hospital and joint teacher of practical midwifery in the school, he proved a valuable acquisition to the institution, while he had already made a considerable name as a writer on his subjects by important contributions to the Proceedings of the Obstetrical Society and of the Medical Society of London, and to our own columns. As early as 1886, for example, he described a case of extirpation of the entire uterus for primary malignant disease, and now papers on the morbid anatomical conditions of the Fallopian tubes, of the vagina, and the uterus followed in rapid succession, as his observations made in the post-mortem room of the London Hospital came in for description. The essentially practical nature of his equipment was well shown in a popular text-book upon the diseases of women, which for some 20 years, and through seven editions, maintained its popularity with medical students. The last edition of this text-book appeared in 1912, the year before Dr. Lewers resigned his appointments and ceased to practise, but actually the final issue, although carefully revised, carried the subjects little further than the previous issues had done. In practice the chief merit of the book was the fact that it recorded the personal experience through many years of a busy obstetrician who was able, out of large clinical practice and deep interest in post-mortem findings, to make characteristic and informatory records of all sorts of cases. In particular Lewers was an expert in the various methods in dealing with cancer of the cervix by operation, including supravaginal amputation, vaginal hysterectomy, and the extended abdominal operation after Wertheim. In 1901 he was elected F.R.C.P.Lond.

In 1902 he wrote a clinical monograph on cancer of the uterus containing useful teaching both on diagnosis and treatment. He was for a time examiner in obstetrics and gynæcology at the University of London, and honorary secretary of the old Obstetrical Society, while he was a regular editorial contributor to THE LANCET, being a member of the staff for some 15 years. He retired from his post at the London Hospital in 1913, at the conclusion of 20 years' service.

EDWARD CANNY RYALL, F.R.C.S.Irel.

THE death of Mr. Canny Ryall, which we briefly announced last week, deprives British surgery of a pioneer whose genito-urinary work was watched and emulated in the surgical centres all over the world. He came of a medical family; his father whose name he bore was a distinguished army surgeon. His younger brother Charles, senior surgeon at his death in 1922 to the Cancer and Bolingbroke Hospitals, was his fellow student. Canny Ryall himself was born at Limerick, but came to London to study medicine, qualifying L.R.C.P. in 1890 and M.R.C.S. in 1893. He was then surgical registrar at Westminster Hospital, also teaching anatomy and physiology in the medical school, and passed the primary F.R.C.S., although he never presented himself for the final examination. He was apt to explain to his friends that his refusal to seek this diploma was in the nature of a protest. He thought it was a handicap to the progress of the medical schools and hospitals of London to regard all candidates, however distinguished, as ineligible for the higher posts unless they were fellows of the college. Whether his views were justified or not, they did not act as a deterrent to success in his own case. And in due course he took the fellowship of the Irish College. After a long period of residence at St. Mark's Hospital for diseases of the rectum, and clinical assistant at St. Peter's hospital for stone, his interest turned increasingly to genito-urinary surgery. The work of E. Beer, of New York, in 1910 led him to attack the minor prostatic obstructions by electrocoagulation, and to develop this work he founded more than 20 years ago in two small dwelling-houses in Vauxhall Bridge-road the hospital known as All Saints. The non-cutting procedures became quickly known and within four years of its foundation the hospital absorbed three more houses in its vicinity.



MR. CANNY RYALL

[Photograph by Elliott & Fry

In 1920 a large mansion was purchased in Hampstead to accommodate the nursing and domestic staff; it is little more than a year ago that the premises in Austral-street, Southwark, were acquired where the hospital, now the largest institution of its kind in this country, stands. In his special field of surgery the numerous instruments he designed, although sometimes modified by others, are still in general use. His cystoscopes and endoscopes are patterns upon which most of the modern appliances have been modelled. They are masterpieces by means of which the necessity for open operation has been reduced to a minimum. He was also a prolific writer, his largest work being a superb atlas of "Operative Cystoscopy" (1925) which contains 670 original illustrations with descriptions in English, French, and German

Sir William Wheeler writes: "It was an inspiring experience to watch Canny Ryall during the examination and treatment of a case. Not content with dexterity, simplicity, and judgment, he commissioned an artist about once a week to make coloured drawings of original procedures and unusual conditions. Hundreds of valuable coloured illustrations which he has left behind will be a permanent record of his indefatigable work. He was indeed a remarkable man. His capacity for work, his originality and inventiveness in the sphere of genito-urinary surgery, combined with his enthusiasm as a teacher, place him among the exceptional few. The story of the birth and growth of the hospital he founded illustrates what can be achieved by the dogged perseverance and enthusiasm of one man. He had many friends, for he was sociable and entertaining by nature and had a ready wit. His recreation he found in the field of golf. He was the first president in 1928 of the Irish medical golfing society and was captain of the Edgware and Sandy Lodge clubs."

Mr. Ryall had been awarded the Arnott medal by the Irish Medical Schools and Graduates Association for meritorious professional services. The medal will now be handed to his widow at the St. Patrick's Day banquet to be held in London next month.

PARLIAMENTARY INTELLIGENCE

THE DEBATE ON CONTRACEPTIVES IN THE HOUSE OF LORDS

WE briefly noted last week the second reading in the House of Lords of Lord Dawson's Bill to restrict the sale, display, and advertisement of contraceptives. The text of the Bill was published in our issue of Feb. 3rd (p. 265).

Lord DAWSON in moving the second reading said: As one who had thought and written about the subject for many years he wished at once to identify himself with the view that the way to keep the sale and use of contraceptives on sound lines was to remove the veil of doubt that prevented honest traders from selling contraceptives; with the result that the profits therefore remained too high and the sale got into the hands of less scrupulous traders. No impartial observer could doubt, whether they regretted it or not, that birth control was here to stay. At the same time there was a good case for protecting children and young persons from having contraceptives pushed at them, either by means of automatic machines in public streets or by lurid displays in shops.

A SURVEY OF THE FACTS

There was no justification for referring to the trade in contraceptives as vicious. The wholesale trade was respectably run. The factories were well constructed, the workers belonged to a high class, and were well treated and well behaved. It was true that the profits were high, but what was the difference between selling contraceptives at a high profit and books on contraceptives at a high profit. If there were a wider acceptance of birth control in theory—it was already accepted in practice—the business would go into the normal instead of underground channels. The same was true of propaganda. If clinics were supported where sane information could be given, lurid publications would cease to be profitable. That birth control was extending in the countries of the western world one was compelled to accept. There had been a fall in the birth-rate in most countries, whether protestant or catholic. If they took the years from 1880 to 1930, they would find a decline of 54 per cent. in the birth-rate in England and Wales, 43 per cent. in Scotland; 42 per cent. and 58 per cent. in Catholic Belgium and Austria; and 42 per cent. in Denmark. Turning to this country and this century, and taking the table of the birth-rate per 1000 married men under 55, a steady fall in fecundity would be noticed. That fall began among the professional classes—among ministers of religion, doctors, lawyers, and teachers, extended to people of other occupations, and might now be said to have reached the artisan classes. A legitimate fear had been expressed that the quality of the population of this country would suffer if fecundity declined in all classes, except semi-skilled and unskilled labour. A recent scientific inquiry into a group of wives of artisan and semi-skilled and unskilled citizens covering 10 years, from 1923 to 1933, had shown, however, a total decline of the birth-rate in the unskilled and semi-skilled classes of 14·4 per cent. during that period, and the decline was increasing, especially among married men of 40 and under. Even more significant was that the average gap between children in that class for that same period had gone up by eight months. There was no surer evidence of birth control than a fall in the birth-rate and an increase in the interval between children. The sale of contraceptives had gone up almost by leaps and bounds. One firm at the present time turned out 8,500,000 per year; another firm dealing in contraceptives turned out 72,000 per week, and home production was reinforced by large importations from abroad. Contraceptives were now part of our social fabric and to oppose them was to beat the air.

The opposition to birth control, Lord Dawson continued, came exclusively from those in middle or late life; the younger generation of parents did not discuss birth control but practised it. Present-day youth had decided on economic grounds and for family reasons that pregnancy should be limited, and choice not chance should decide each pregnancy. When told that these things should be attained by self-control and abstention the young persons of to-day replied that they were being asked something which was new, i.e., to practise celibacy within the state of wedlock. There was not much evidence of abstention in the marriages of last century with their large families, and human nature had not changed since, nor had biological laws. The foundation of the home required physical love, periodically repeated, yet no one would be rash enough to say that in these days families should be as large as those of last century. It was a case of large families and no contraception or small families and contraception. For example, a couple with a modest income who married—the man at 25 and the girl at 21—might after a first child and possibly the second, decide that for seven or eight years they could afford no more. That could be done by abstention, which as a medical man he held would be (1) impossible, (2) would destroy their health, or (3) would lead to irregularities in sex relations within the home, that is, perversities and eccentricities, which were serious matters. In 1847 the infant death-rate was 172, sufficiently high to act as a safety-valve, whereas to-day the figure was down to 65. Contraception had

not sprung from any evil purpose or selfish impulse. He thought contraception was the right course so long as it was properly carried out, with delicacy of feeling and proper restraint. The aim of his Bill was a limited one, namely, the protection of the immature by preventing the obtrusive sale of contraceptives. There was no more perturbing thing than precocity in youth. The real value of childhood went if it was not protected from the obtrusion of sex matters too early in life.

The trouble was a real one. An increasing number of automatic machines were being placed in thoroughfares, outside chemists' shops or rubber shops, and were left there when the shops were closed. Opposite a large factory, for example, was one from which aspirin tablets or cough lozenges could be bought for 6*d*. or contraceptives for a shilling. It was impossible to justify anything of this kind.

ANALYSIS OF THE CLAUSES

Analysing the clauses of the Bill, Lord DAWSON said that automatic machines were dealt with in Subsection (*a*) of the first clause. More and more shops had in the windows contraceptives with flamboyant and aggressive illustrations and descriptions. Subsection (*c*) of Clause 1 laid it down that it should be illegal to display contraceptives so as to be visible to persons outside any shop. Display inside the shop was not limited nor was the sale of contraceptives to be restricted to any person at any age. If it were asked why the sale of contraceptives to young people was not forbidden he would recall conditions of prohibition in the United States, where it became a matter of honour for every youth to carry a whisky flash in his hip pocket. Attempts to dragoon youth defeated their own object. In his judgment the intervention of the resistance which the entry into the shop provided would mostly be deterrent enough. Unless these things were thrown at a healthy youth he would not trouble much about them, though of course there were exceptions. It was notorious that both in and out of marriage sex had a curious tendency to run to perversion. That was one of the great problems of the age. Therefore the sanest thing to do was to content themselves with doing away with obtrusion in display and obtrusion in sale, whether in an automatic machine or in a shop. Subsection (*d*) prevented the sending of circulars about contraceptives to unmarried people under 18. That, again, was surely desirable. If the House gave the Bill a second reading, obvious amendments would be required, which he would be only too happy to accept, provided that the principle of the Bill was not thereby undermined. It was obvious, for example, that nurses, midwives, and doctors must be exempt from the operation of Subsection (*b*). In Subsection (*d*) magazines, newspapers, and such like publications which happened to contain an advertisement of contraceptives must be protected from risk of being charged with an offence. If the Bill went to Committee he would immediately move to add a proviso to deal with these points. The purpose of the Bill, he admitted, was limited in its scope, but it was none the less important. It would protect the adolescent, it would infringe no liberty, and he commended it to favourable consideration.

MOTION FOR REJECTION

Lord BANBURY moved the rejection of the Bill. He said he was in rather a difficult position, because he had come to the conclusion that Lord Dawson was strongly in favour of the use of contraceptives, and that he did not think that they were in any way injurious to health. Lord Horder had authorised him to quote his opinion that the use of contraceptives was in no way injurious to health. He could understand persons who objected to contraception introducing a Bill to make it a crime to sell or give away contraceptives, but the Bill did nothing of the sort; it restricted their sale, display, and advertisement. Lord Dawson had said that birth control was here to stay and was part of our social system: then why bring in a Bill to restrict the sale of contraceptives. If birth control was right, every facility should be given for their sale. He was in favour of liberty. If a person liked to do something which was not injurious to health, why on earth should he not do so. The wife of a labouring man had to perform the duties of wife, mother, cook, and nurse, with the prospect every 18 months of another child. How could she do that with any comfort to herself or with any chance of preserving her health? Under this Bill it would be impossible for a nurse or midwife visiting a poor woman in bad health to sell or offer for sale any contraceptives. He presumed that the Bill would not prevent a nurse or a doctor from giving contraceptives. He was informed—he did not know whether it was correct—that one of the best forms of contraceptives was olive oil. If that were so, as he read the Bill any person seeing a bottle of olive oil in a shop window might report the shopkeeper for displaying a contraceptive and a magistrate would have to waste time considering whether or not this was so. There might be in THE LANCET or any other medical paper something relating to contraceptives. He did not suppose that the noble Lord desired to prevent discussion of medical matters in a medical paper. If a young woman wanted to buy a medical journal at a railway bookstall, would the man in charge have to ask her whether she was under 18 and unmarried?

CONFLICTING VIEWS ON PRINCIPLE

The Bishop of LONDON said that while he did not agree with all Lord Dawson had said, he enthusiastically supported his Bill. Was it really possible to think that there is no harm in those filthy things being sent as they were to every engaged couple in this country? As chairman of the London Public Morality Council he had realised that an immense amount of indignation was being voiced by the whole of England; over a hundred organisations had written to the council in protest. He agreed with Lord Dawson that they could not interfere with what went on in married life but that for the sake of the young people he asked the House to pass the Bill.

Viscount FITZALAN said that it was quite impossible for him to accept the view that the use of contraceptives was not wrong. He had a perfect horror of their use and of the harm and evil which he believed they were doing. Looking at the Bill from the practical point of view, however, he was bound to acknowledge that the object of the measure was to abolish certain evil things which were going on at present, and so he supported it.

The Bishop of ST. ALBANS said that if Lord Dawson really believed that contraceptives were a gift of God through science then he should say so perfectly plainly, and he should get the British Medical Council to make a pronouncement on the subject. The noble Lord suggested to their lordships that the medical profession were unanimous in believing that the use of contraceptives was healthy, promoted happier homes, healthier motherhood, a finer race of children, and, above all, finer character. He would give them to believe that practically all the members of his profession would agree with all that. He (the Bishop) had heard it stated by responsible people that practically the only medical men who were not in favour of birth control were members of the Roman Catholic communion. That he denied. (Hear, hear.) There were quite a number of medical men who were not members of that communion who held that on grounds of health, let alone anything else, there was grave doubt as to the beneficial effects of mechanical and chemical devices for frustrating the biological end of sexual intercourse between men and women.

The Earl of LISTOWEL said he could not support the Bill, although he agreed with the principle which lay behind it. At present knowledge of birth control was provided for the working classes only by voluntary bodies, which could not cover the ground adequately. He hoped the time would come when Parliament would sanction the setting up of clinics under the auspices of local authorities, where a sufficient local demand existed, to give such information.

Lord PONSONBY opposed the Bill, on social grounds. He said he did not suppose it would go far, and it had no chance in the House of Commons, as there would be no time for it. The result of this discussion would be that contraceptives would be sold in increased quantities, with extracts from Lord Dawson's speech. The Bill was merely nibbling at a very big problem.

The Archbishop of CANTERBURY said that the Bill should be considered on its own merits. He thought Lord Dawson had devoted an unnecessarily large part of his speech to setting forth his well-known views on birth control, and it must not be taken that he (the Archbishop) agreed with a great deal of what his noble friend had said. There could be no doubt that they were dealing here—it might be most inadequately—with a growing evil. There was no question that the widespread purchase and use of contraceptives was resulting all over the country in promiscuous acts of sexual intercourse among unmarried persons. He viewed this whole matter with great repugnance and he wished indeed that it was possible to go even further than Lord Dawson's Bill, but they must always have some regard for the possible, and here at least was a serious attempt to check in some measure the further growth of an evil which was infecting the whole community, poisoning and damaging its moral health, as well as its self-control and self-respect.

GOVERNMENT REPLY

The Earl of FEVERSHAM, Lord-in-Waiting, replying for the Government, said that the subject matter of this Bill went to the very root of the social fabric, and any measure dealing with this question must have a strong measure of public support before it had any prospect of passing into law. The Government were strictly neutral in regard to the Bill; they would neither support it nor oppose it. They would carefully examine the views which had been expressed that afternoon.

Lord DAWSON said that after the debate he was still without the constructive alternative to his proposals for which he had so often asked, but had never received.

BILL READ A SECOND TIME

The motion for the rejection was defeated by 45 votes to 6—majority 39, and the Bill was read a second time. Lord Balfour of Burleigh and Lord Dawson were tellers for the "contents" who included the Archbishop, the Lord Chancellor, and four Bishops.

NOTES ON CURRENT TOPICS

Registration of Births, Deaths, and Marriages in Scotland

In the House of Commons on Feb. 16th Mr. TRAIN moved the second reading of the Registration of Births, Deaths, and Marriages (Scotland) Amendment Bill. He said the object of the Bill was to amend somewhat the present regulations. Clause 1 contained a preliminary provision which secured that in the ordinary case of legitimation by subsequent marriage no entries were in future to be made in the register of corrected entries. In the great majority of cases legitimation by subsequent marriage was brought to the notice of the registrar by the parents coming forward with an extract entry of the marriage. In such a case the proper course under the Bill would be to apply for re-registration of the birth and such re-registration would remove the need for any entry in the register of corrected entries. In those few cases where legitimation was found by decree of court, and where the person concerned himself sought a declarator of legitimacy, it might happen that his parents were dead, and the present practice of noting the import of such decree in the register of corrected entries was being retained for the convenience of all the parties concerned. In Clause 2, Subsection (1) provided for re-registration of births in ordinary cases of legitimation. The Registrar-General was given power to authorise re-registration in such cases. Where the father's name was already recorded, either because he acknowledged paternity when the birth was first registered, or because the paternity was later found by a competent court, the Registrar-General would normally be in a position to authorise re-registration on the strength and the evidence of the extract entry of marriage; but when the father's name had not been so recorded the Registrar-General would authorise re-registration only when he was furnished with a warrant from the Sheriff. There was a retrospective provision so that the re-registration would be at once available to the host of people who had been legitimated by marriages which took place in the past. Clause 3 repealed the section in the principal Act containing the provisions which were being replaced by Clause 2 of this Bill. Clause 4, which was rather important, provided for re-registration if the entry of birth was affected by any matter contained in the register of corrected entries respecting status or paternity. The clause also covered declarators of legitimacy—that was to say those exceptional cases where legitimation was furnished as a result of court action. Clause 5 repealed the part of Section 26 of the Act of 1854, which was not only obsolete, but was a cause of considerable hardship. As to the number of illegitimates who were affected he was informed by the Registrar that in 1931 638 decrees of paternity were recorded and 221 legitimations, but a proportion of the total number was not brought to the registrar's notice. He hoped that the Bill would encourage parents to come forward and secure by re-registration that the legitimation of the children was properly recorded. It was considered that there could not be fewer than a thousand new cases arising each year which were affected by legitimation alone and which would therefore benefit by the Bill. The total births in Scotland for 1932 were 92,220, and of these 6661, or 7·22 per cent., were registered as illegitimate.

GOVERNMENT SUPPORT

Mr. JAMIESON (Solicitor-General for Scotland) said that the Government were in complete sympathy with the Bill and the proposals contained in it were such as they could recommend to the consideration of the House. There were, however, certain matters which he thought might be dealt with by amendment in Committee.

The Bill was read a second time.

HOUSE OF COMMONS

WEDNESDAY, FEB. 14TH

Housing Shortage in the Midlands

Mr. ALEXANDER RAMSAY asked the Minister of Health if his attention had been drawn to the serious shortage of housing accommodation in certain Midland towns; and what steps he proposed to take in the public interest to increase the production of houses.—Mr. SHAKESPEARE (Parliamentary Secretary to the Ministry of Health) replied: My right hon. friend has received resolutions to the effect suggested from certain towns in the Midlands and elsewhere. It is open to and is indeed the duty of the local authorities to submit to him any proposals for providing further houses which may be required and are not being provided by private enterprise.

State-aided Housing in Scotland

Mr. ANSTRUTHER-GRAY asked the Secretary of State for Scotland the number of State-aided houses erected in Scotland in 1931, 1932, and 1933.—Mr. SKELTON (Under-Secretary of State for Scotland) replied: The number of State-aided houses erected by local authorities and private enterprise in Scotland in 1931, 1932, and 1933 was 10,654, 15,818, and 20,915 respectively.

Young Soldier's Death after Vaccination

Mr. GROVES asked the Financial Secretary to the War Office whether his attention had been called to the fact that Private Appleyard, the young soldier who recently shot himself, had been suffering from the effects of vaccination for two months before he took his life; and whether any other soldiers, during the past 12 months, had had bad arms resulting from vaccination.—Mr. DUFF

COOPER replied: The late Private Appleyard suffered an unusually severe local reaction following vaccination which necessitated his being excused full duty from Oct. 5th to 21st and from Nov. 14th to 24th, 1933. The information available does not indicate that "bad arms" following vaccination have been abnormal either in number or severity during the past twelve months.

THURSDAY, FEB. 15TH

Employment Hours of Juveniles

Mr. MANDER asked the Home Secretary if, in view of the improvement in the industrial situation, he would now, in accordance with promises made, introduce a measure relating to the hours and conditions of the employment of juveniles.—Mr. HACKING (Under-Secretary, Home Office) replied: A Bill is to be introduced almost immediately to restrict the hours of employment of young persons and to deal with other conditions in the distributive trades. This measure will apply to a very large number of young persons whose hours at present are either not regulated at all or subject to the antiquated limit of 74 hours, inclusive of meal times, contained in the Shops Act of 1912. The Bill, if passed, will make a very big advance in the direction indicated by the hon. Member. Whether it will be possible in the near future to go still further on these lines is a matter which will receive the sympathetic consideration of the Government.

Sale of Poisonous Drugs

Mr. DAVID GRENFELL asked the Home Secretary the number of prosecutions for breaches of the law relating to the sale of poisonous drugs in each of the preceding three years; and whether he was satisfied that the inspection as carried out by police officers was adequate in view of the provisions of the Poisons and Pharmacy Act of 1933.—Mr. HACKING replied: The Pharmaceutical Society initiated proceedings in Great Britain for breaches of the Poisons and Pharmacy Acts in 170 cases in 1931, in 169 cases in 1932, and in 161 cases in 1933. In addition, the police in England and Wales, who have power to intervene only in cases in which they have reason to suspect a breach of the law, prosecuted in 18 cases in 1931 and in 10 cases in 1932. The figures of police prosecutions in 1933 are not yet to hand, nor has there been time to obtain information in regard to such prosecutions in Scotland. As regards the second part of the question, the duty of enforcing the provisions of the Act of 1933 is placed by the Act upon the Pharmaceutical Society and the local authorities, according to the classification of the poison in the poisons list. Both are given full powers of inspection.

Mr. GRENFELL: Have the Home Office any jurisdiction in regard to the number of inspectors to be appointed and will they take part in the appointment of the inspectors?

Mr. HACKING: Under the provisions of the Act routine inspection has been confined to the Pharmaceutical Society with undoubtedly inadequate powers. The new Act considerably increases those powers, but it has not yet come into force and we shall have to wait to see whether those powers are sufficient.

Medical Inspection of School-children

Sir EDWARD CAMPBELL asked the Parliamentary Secretary to the Board of Education whether he was aware that the medical inspection of children in elementary schools did not extend below the waist; and if he would ensure a more thorough examination in the future.—Mr. RAMSBOTHAM replied: My noble friend is aware that the medical inspection of children in elementary schools does not normally extend below the waist, or necessitate the entire stripping of every child. In cases, however, where there is reason to suspect the existence of a defect which requires a more complete examination, suitable arrangements are made for this to be carried out. My noble friend is not satisfied that the advantages of making a complete examination as a routine practice would justify its adoption in view of the objections which might be raised by parents.

Sir E. CAMPBELL: Would the hon. gentleman be willing on some future occasion to receive a deputation of those interested in boys' club work who have a great deal of knowledge on the subject?

Mr. RAMSBOTHAM: I shall be glad to arrange for a deputation to be received.

Public Health Services

Mr. TOM SMITH asked the Minister of Health the numbers of county borough, county (excluding London), non-county borough, urban district, and rural district councils, respectively, in England and Wales, administering each of the following services: Maternity and child welfare, supervision of midwives, tuberculosis under the Public Health (Prevention and Treatment of Diseases) Act, 1913, treatment of the blind under the Public Health Act, 1925, treatment of persons of unsound mind, registration of nursing and maternity homes, hospitals (other than for infectious diseases) under Section 131 of the Public Health Act, 1875, and infectious diseases hospitals; and if he would consider the inclusion of such analysed information in the annual report of the Ministry.—Sir HILTON YOUNG replied: As regards the last part of the question, I will consider whether information of this kind can conveniently be included in future annual reports of the Ministry of Health. The following are the numbers of local authorities administering various services in England (excluding London) and Wales:—

Services.	Numbers of councils administering these services—				
	Counties.	County boroughs.	Non-county boroughs.	Urban districts.	Rural districts.
Maternity and child welfare	61	83	138	108(d)	14
Supervision of midwives ..	61	83	25	6	—
Tuberculosis under the Public Health (Tuberculosis) Act, 1921*	61(a)	83	—	—	—
Treatment of the blind under the Public Health Act, 1925	16	4	—	—	—
Treatment of persons of unsound mind	61(b)	83	14	—	—
Registration of nursing and maternity homes ..	61	83	¶	¶	¶
Hospitals (other than for infectious diseases) under Section 131 of the Public Health Act, 1875 † ..	2	29	1	1	—
Infectious diseases hospitals	18(c)	71	122	114	149

* This is the statute under which local authorities provide institutional treatment for tuberculosis. Supplementary and ancillary arrangements for the treatment of this disease have been made by many local authorities under the Public Health (Prevention and Treatment of Disease) Act, 1913, but no complete record of the number of such authorities is available.

† Excluding also hospitals administered in connexion with the maternity and child welfare and tuberculosis services mentioned above.

¶ Section 9 (2) of the Nursing Homes Registration Act, 1927, empowers the council of a county, on the application of the council of any county district within the county, to delegate any of its powers and duties under the Act to the council of that district. There is no complete information as to the action taken under this subsection.

(a) Including 3 counties and 4 county boroughs which exercise their functions through joint committees.

(b) Including 3 counties and 33 county boroughs which exercise their functions through joint boards.

(c) Including those which exercise their functions through joint hospital boards or isolation hospital committees.

(d) Including 3 urban districts and 1 rural district which exercise their functions through joint committees.

Housing and Slum Clearance

Major NATHAN asked the Minister of Health the estimated number of persons to be displaced and rehoused during the period 1934 to 1938 under the provisions of the Housing Act, 1930, by the operations of the London County Council, the metropolitan borough councils, and the local authorities in the metropolitan police district outside the administrative county are, respectively.—Sir HILTON YOUNG replied: It is estimated that about 150,000 persons living in the County of London will be displaced and rehoused during the period mentioned by the combined operations of the London County Council and the metropolitan borough councils. The operations of the borough councils will be closely coördinated with those of the county council, and will represent about 10 per cent. of the total. The number of persons to be

displaced and rehoused by local authorities wholly or partly in the metropolitan police district, but outside the administrative county area, is estimated as about 19,000.

Mr. HICKS asked the Minister of Health the number of houses approved for Exchequer subsidy under the Housing (Financial Provisions) Act, 1924, under section 1 of the Housing (Financial Provisions) Act, 1933; and the latest date for completion of these houses.—Sir HILTON YOUNG replied: The number of houses so approved is rather over 8000. The normal date for completion is March 31st, 1934, but I am prepared to entertain applications for extension up to a date not later than June 30th next.

Mr. D. G. SOMERVILLE asked the Minister of Health the result to date of inquiries into the adequacy of the slum-clearance scheme at 11 towns.—Sir HILTON YOUNG replied: The result has been as regards eight of the towns to furnish information necessary for the discharge of my responsibilities in respect of slum clearance under the Act of 1930, and I have communicated to the authorities concerned my conclusions on the reports made to me. The report on the inquiry at Bootle is still receiving my consideration; I am awaiting the inspector's report on the inquiry at Leicester; and I am making certain further inquiries of the corporation of Croydon.

Water-supply in Rural Areas

Captain WATT asked the Minister of Health what recent representations had been made to his department from rural districts regarding the shortage of water; and whether it was the intention of the Government to take any emergency measures over and above those included in the proposed legislation for improving rural water-supplies.—Sir HILTON YOUNG replied: Since Oct. 1st last 32 representations from rural districts regarding the shortage of water have been received, of which 17 were made this year. I am about to issue a circular to local authorities regarding the temporary emergency measures to be taken, especially in urban areas, in the event of a prolongation of the drought. The essential need in rural areas is for permanent measures, the provision of which will be assisted by the Bill now before Parliament.

Census Returns

Mr. HERBERT WILLIAMS asked the Minister of Health what percentage of the population of England in 1931 had been born in Scotland and, for comparison, the percentage of the population of Scotland which had been born in England.—Sir HILTON YOUNG replied: Of the total population enumerated in England and Wales at the 1931 census, 366,486 persons or 0·92 per cent. were returned as having been born in Scotland. Of the total population enumerated at that census in Scotland, 168,640 persons or 3·48 per cent. were returned as having been born in England and Wales.

National Health Insurance

Mr. HERBERT WILLIAMS asked the Minister of Health the approximate number of persons between the ages of 60 and 65 years at present insured under the National Health Insurance Act.—Sir HILTON YOUNG replied: It is estimated that the number of such persons on Dec. 31st, 1931, the latest date for which information is available, was approximately 720,000.

Provision of Food for Hunger Marchers

Mr. MAXTON asked the minister of Health why he caused an official of his department to proceed to Northwich, Cheshire, within the last fortnight to countermand the decision of the local public assistance committee to provide the ordinary rations for casuals to the Scottish hunger-marchers.—Sir HILTON YOUNG replied: The hon. Member appears to have been misinformed. No instruction such as he suggests has been issued. The question whether these persons, who had recently collected money and who were in possession of a certain amount of food, were in fact destitute was discussed with the local officials in the presence of my inspector, and on finding sufficient food was not available it was decided to issue the ordinary rations.

Children Attaining Age 16 Years

Mr. HOLDSWORTH asked the Minister of Health the estimated number of persons of each sex attaining the age of 16 years in each of the years from 1924 to 1933.—Sir HILTON YOUNG replied: The following are the estimated numbers of persons in England and Wales attaining the age of 16 in the understated years:—

	Males	Females		Males	Females
1924 ..	371,000	.. 367,000	1929 ..	356,000	.. 356,000
1925 ..	365,000	.. 362,000	1930 ..	355,000	.. 355,000
1926 ..	357,000	.. 355,000	1931 ..	329,000	.. 328,000
1927 ..	352,000	.. 349,000	1932 ..	319,000	.. 315,000
1928 ..	353,000	.. 352,000	1933 ..	271,000	.. 269,000

Patent Medicine Duty

Sir JOSEPH NALL asked the Secretary to the Treasury whether he was aware that the use of the phrase, "No proprietary rights are claimed in this preparation other than the exclusive right to the trade mark," had the effect of avoiding payment of the patent medicine duty on made-up medicinal goods; if he could give any estimate of the loss of revenue due to this practice; and whether he would consider the desirability of introducing a 1*d.* stamp for such packages if of small value.—Mr. HORE-BELISHA replied: As regards the first part of the question, I would explain that the law provides for exemption from Medicine Stamp Duty in favour of known, admitted, and approved remedies when sold under certain conditions by duly qualified chemists and druggists. I am aware that certain manufacturers have taken steps, one of which is a disclaimer of proprietary rights, to bring their preparations within the scope of that exemption but I am afraid it would not be possible to estimate the amount of revenue involved. As regards the last part of the question, I have noted my hon. friend's suggestion.

TUESDAY, FEB. 20TH

Compensation for Silicosis

Mr. JOHN asked the Home Secretary whether he was aware that the law governing the awarding of compensation to victims of silicosis needed amending; that the provisions under the schemes of 1928 and 1931 were inadequate, and that large numbers of miners suffering from silicosis were deprived of compensation if they had not been working in the process within a period of three years; and whether he was prepared to introduce legislation amending the present schemes.—Sir JOHN GILMOUR replied: The Miners' Federation have made representations to me in favour of reviewing the arrangements in force under the present scheme and I have written to the Mining Association on the subject. On receipt of their reply I will consider whether any amendment of the scheme is necessary, and I can assure the hon. Member that the matter will not be lost sight of.

Protection against Gas Attack from the Air

Captain GUEST asked the Prime Minister whether any education of the masses was being undertaken as to how they should behave in case of gas attack from the air.—Mr. MACDONALD replied: I would refer my hon. friend to the reply given by the Secretary of State for the Home Department on Nov. 23rd, 1933. The problem of protection has engaged the attention of successive Governments, and precautions are being taken to safeguard the civil population as far as possible against air attack.

Water Shortage in Dorset

Mr. HALL-CAINE asked the Minister of Health if he had received any reports of water shortage, either actual or anticipated, in Dorsetshire; and, if so, which places were affected.—Mr. SHAKESPEARE replied: My right hon. friend has received such reports in respect of the Sturminster rural district and the parish of Bere Regis in the Wareham-and-Purbeck rural district. Some improvement has been made in the supply to Bere Regis by the deepening of the public well and by obtaining temporary supplies. A comprehensive scheme for their district has been adopted by the Sturminster rural district council.

FLEMING HOSPITAL, NEWCASTLE-ON-TYNE.—The Fleming Memorial Hospital for Sick Children is entirely to be rebuilt at a cost of £40,000, of which only about £10,000 is as yet in hand. The building was erected about 50 years ago, and the wards are now out of date and overcrowded, but "it will be admirable for administration purposes and as a nurses' home."

MEDICAL NEWS

Society of Apothecaries of London

Dr. J. O. Wakelin Barratt, the master, presided over a Livery dinner of this Society on Tuesday last, when the principal toast was the Royal Colleges. Dr. Cecil Wall, past master, in proposing it, said that this year represented a triple centenary of contacts between the Society and the College of Physicians. In 1634 the College, in trying to put down irregular practitioners (including apothecaries), was exercising indiscreetly its right to destroy "naughty drugs." In 1734 the Society was putting in its Physic Garden at Chelsea, at a cost of £280, a statue of Sir Hans Sloane, P.R.C.P., in recognition of his generosity in connexion with it. In 1834, before a Select Committee of the House of Commons, representatives of the Colleges were expressing approval of the way in which the Society was raising a trade into a profession, and of its exemplary methods of conducting examinations. Replying for the Royal College of Physicians, Sir Charlton Briscoe, the senior censor, said that he feared both the Society and the College were slipping into obscurity, judging by the reactions of London taxi-drivers when they were mentioned. Sir Holburt Waring, president of the Royal College of Surgeons, speaking of examinations and the curriculum, asked whether the time had not come when men going in for medicine should be seriously "vetted." Many students had no good reason for entering the profession, and were not particularly suited for it. If the best men were to be obtained there should be selection before training, as in modern industry, and the selection should take account of physical and moral as well as mental characteristics. Sir Holburt felt also that too much emphasis had been placed on examinations and too little on training—too much on books, too little on practice. The theoretical preliminary teaching should be confined to principles and the details should be left for the practical work. The obstacle to revision of the curriculum was the vested interests of teachers. In conclusion Sir Holburt Waring said he thought the time had also come when no unqualified person should be allowed to practise. Sir William Willcox, senior warden, proposing the health of the Guests, said that the Society had as its aim the encouragement and help of the general practitioner. Sir Francis Fremantle, M.P., in reply, urged that the practitioner, with his combination of science and the humanities, should play a greater part in local and national affairs. Mr. G. A. Wathen, master of the Mercers' Company, also expressed thanks for the welcome given to the Society's guests.

Growth of King's College Hospital

At the annual dinner of this hospital Lord Beatty, who presided, stated that whereas in 1912 the number of in-patients was 2991, last year it was 6779. In the former year the average weekly cost of each in-patient was £1 18*s.* 6*d.*; last year it was £4 3*s.* 5*d.* In the same period out-patients attendances rose from 3748 to 30,208. The annual expenditure in 1912 was £22,500; last year it was £94,000.

Moorfields Hospital Dinner

The annual dinner of past and present students of the Royal London Ophthalmic (Moorfields) Hospital took place at the Langham Hotel on Feb. 8th, with Mr. Elmore W. Brewerton, consulting surgeon to the Royal Westminster Ophthalmic Hospital, in the chair.

In replying to the toast of the school, Mr. Charles Goulden, the dean, stated that the school was in a flourishing condition, and that there had been an increase in the number of students during the past year. Twenty-six of the 30 successful candidates for the diploma of ophthalmological medicine and surgery had been trained at Moorfields, and at the D.O. examination of Oxford, of the six successful candidates, four had worked there. During the past year Mr. H. B. Stallard had joined the staff, and among the distinctions which had come to past students he mentioned the election of Dr. Gordon Holmes to the Fellowship of the Royal Society; the knighthood bestowed on Sir Stewart Duke-Elder; and the K.C.V.O. on Sir William Lister. He also said that Mr. Mayou had been elected President of the Ophthalmological Society.

Armistice Day Collection

It is announced that the receipts from the sale of poppies on Armistice Day last year amounted to £452,500, an increase of more than £30,000 over 1932.

Alliance Scientifique et Médicale Française

The second meeting of this society was held in Bordeaux on Feb. 3rd. Dr. Claoué showed a number of films of scientific and medical interest, and afterwards spoke on the need for the medical profession to consider technical questions of social medicine and especially hospital administration. The next meeting will be held on April 7th, and further particulars may be had from Dr. Claoué, 39, Rue Scheffer, Paris, XVI.

Royal Sanitary Institute

This institute has arranged to hold a meeting at the Central Middlesex County Hospital, Acton-lane, Willesden Junction, London, N.W., on Saturday, March 10th, at 10 A.M., when a discussion on maternity and children's hospitals will be opened by Mr. A. Saxon Snell, F.R.I.B.A. The chair will be taken by Dr. George F. Buchan, chairman of the council of the institute. After the discussion the members will be conducted over the new children's wing of the hospital.

Manor House Hospital, Hampstead

An appeal for £100,000 is being issued for building an additional wing and a new service block. This is one section of a scheme to construct an entirely new men's hospital of over 300 beds at an estimated cost of £350,000. Meanwhile the neighbouring Ivy House, formerly the London home of the late Madame Pavlova, has been acquired with the intention of creating there a women's hospital; before that can be taken in hand, however, £50,000 will have to be raised. Last year Manor House Hospital cost £50,000 to maintain—twice as much as ten years ago. The hospital is owned and managed by the Industrial Orthopædic Society which has a membership of nearly 20,000 working men.

Joint Tuberculosis Council

After their usual mid-winter meeting in London the Council entertained a few guests to lunch at the Hotel Russell on Feb. 17th, the chairman of the Council, Dr. G. Lissant Cox, presiding. Replying to his toast of The Guests, Lord Dawson regretted the absence of Miss Olga Nethersole, whose persistence for a good cause was beyond praise. Speaking is overtime in the medical profession, he remarked, but he was glad to be there, for in his capacity of president of the Royal College of Physicians of London he was helping to allot a large sum of money from the Prophit trust, half to the campaign against cancer and half to the campaign against tuberculosis. It was, he thought, not difficult to spend money usefully on team research in cancer, but research in tuberculosis had, in the main, been unsatisfactory in its results. Tubercle, it was true, is declining—largely owing he added, to the work of the men with whom he was lunching—but when it came to getting down to the cause of this decline there was little satisfaction. Could anyone, he asked, tell him even now the significance of a tuberculin test? Sir Henry Gauvain, who proposed The Council, thought it desirable to state that it was not merely a luncheon club. It represented, in fact, all branches of activity against tuberculosis, and he put in a word for the genius in organisation shown by the chairman of the Council in his reports. Dr. Ernest Ward, replying as secretary of the Council for ten years past, said he was a little worried about research, which seemed so largely to have been a mere restatement of known facts in rather fewer words, and he admitted the drawbacks of an official service which did not necessarily give play to the three virtues of initiative, resource, and efficiency. To him the treatment of tuberculosis could be summed up in one word—resourcefulness. Captain G. S. Elliston, M.P., proposed The Chairman, and was supported in so doing by Dr. Charles Porter and Dr. Jane Walker.

The Use of Out-patient Departments

A report just presented to the house committee of Guy's Hospital suggests that the out-patient department as a whole is now being used more and more in a consultative capacity. Taking the general average over all sections of the department throughout the year, the number of visits per out-patient works out at only 2·6, from which it is deduced that a large proportion of the patients are sent by their private or panel doctors to get the benefit of examination by the visiting specialists at the hospital, and then return to their own practitioners to continue treatment.

Donations and Bequests

The late Mr. J. Sanders of Ealing and of Pyworthy, Devon, among other bequests, left £2500 to the King Edward Hospital, Ealing, and £2000 for the endowment of two beds; £500 to the Surgical Aid Society; £1000 to the National Institute for the Blind; £1000 to the National Institute for the Deaf; £1000 to the Hospital for Sick Children; £1000 to the Royal Hospital and Home for Incurables; £250 to the Royal Free Hospital; £1000 to Treloar's Cripples Home; and £500 to the London Temperance Hospital.

An Unsatisfactory Isolation Hospital

At a recent meeting of the Glendale rural district council at Wooler, Northumberland, the medical officer, Dr. Alexander Dey, called attention to the unsatisfactory condition of the Glendale isolation hospital. Captain Hamilton, a member of the council, laid stress upon the inaccessibility of the hospital. "You have," he said, "to pass over two fields, one of which is an arable field. The first field is a grass bank and the ambulance has to stop at Haugh Head Farm. The patients have to be carried on stretchers up this hill over a fence and through the next field. . . . The road has fallen into disuse. All provisions have to be carried by hand. The doctor has to go over these fields twice a week. There is no telephone. All the water has to be boiled in kettles." After discussion the matter was referred to a committee including the medical officer and the sanitary inspector.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Feb. 26th.

Odontology. 8 P.M. Mr. Herbert Smale: Geminated Molars. Mr. Robert Bradlaw: Three Cases of Neuralgia. Mr. G. T. Hankey: Ewing's Tumour of the Mandible. Mr. H. O. Dickin: Oral Screens in the Treatment of Certain Dental Irregularities.

WEDNESDAY.

Comparative Medicine. 5 P.M. Sir Rickard Christophers: Malaria from a Zoological Point of View.

THURSDAY, March 1st.

Tropical Diseases and Parasitology. 8.15 P.M. Dr. Walter Kikuth (Elberfeld): Bartonella and Allied Infections in Animals and Man.

FRIDAY.

Otology. 10.15 A.M. (Cases at 9.30 A.M.) Discussion: The Diagnosis and Treatment of Brain Abscess. To be opened by Mr. Hugh Cairns (in collaboration with Mr. C. Donald) and Mr. Sydney Scott.

Laryngology. 5 P.M. (Cases at 4 P.M.) Illustrated by Cinematograph. Papers. Dr. A. W. Proetz (Washington University): Nasal Ciliated Epithelium, with Special Reference to Infection and Treatment. Mr. V. E. Negus: The Action of Cilia and the Effect of Drugs on their Activity. Cases illustrative of sinus infection will be shown but not discussed.

Anæsthetics. 8.30 P.M. Clinical evening.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Feb. 26th.—8.30 P.M., Discussion on Arterial Disease of the Extremities, to be introduced by Prof. E. D. Telford.

WEDNESDAY.—9 P.M., Dr. C. E. Lakin: Disturbances of the Body Temperature. (Second Lettsomian lecture.)

HUNTERIAN SOCIETY.

MONDAY, Feb. 26th.—9 P.M. (at the London Mansion House), Dr. B. T. Parsons-Smith: Cardiac Failure in the Eighteenth Century and its Modern Conception. (Hunterian oration.)

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY, 49, Leicester-square, W.C.

WEDNESDAY, Feb. 28th.—5 P.M., Dr. W. N. Goldsmith: Some Points on the Nervous and Psychological Ætiology of Skin Disorders.

NORTH LONDON MEDICAL AND CHIRURGICAL SOCIETY, Royal Northern Hospital, Holloway-road, N.

WEDNESDAY, Feb. 28th.—9 P.M., Joint Meeting with the City Division of the B.M.A. Dr. H. C. Semon: The Alarming Increase of Fungus Infections of the Skin and a New Outlook on their Treatment.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION, 11, Chandos-street, Cavendish-square, W.

FRIDAY, March 2nd.—5 P.M., Discussion on the Necessity for Greater Reciprocity between Parents, Consultants, Home Doctors, and School Authorities, More Especially in Matters Relating to Health, to be opened by Sir Montague Foster and Dr. H. C. Cameron.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

TUESDAY, Feb. 27th, and following THURSDAY.—5 P.M., Sir George Buchanan: International Coöperation in Public Health: Its Achievements and Prospects. (Milroy lectures.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Feb. 26th, to SATURDAY, March 3rd.—MEDICAL SOCIETY OF LONDON, Chandos-street, W. Lecture-demonstration on Jaundice, by Dr. A. E. Clark-Kennedy, on Tues., at 2.30 P.M. to 4 P.M.—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C. Demonstration on Antenatal Diagnosis and Treatment. Frid., at 5 P.M., by Dame Louise McIlroy.—PRINCE OF WALES'S HOSPITAL, Tottenham, N. Course in Medicine, Surgery, and the Specialties. All day.—ST. GEORGE-IN-THE-EAST HOSPITAL, Raine-street, E. Special Demonstration on the Treatment of Recent and Old Fractures, by Mr. Alan C. Gairdner, on Tues., from 2.30 P.M. to 5 P.M.—PANEL OF TEACHERS. Individual clinics in various branches of medicine and surgery are available daily by arrangement with the Fellowship of Medicine.

Courses of instruction, clinics, &c., arranged by the Fellowship of Medicine are open only to Members and Associates.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, March 1st.—4.30 P.M., Dr. S. A. K. Wilson: How to Live the Life of Modern Times. 9 P.M., Mr. J. G. Yates Bell: After-treatment of the Urological Patient.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Feb. 26th.—2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Kinnier Wilson: Infective Diseases of the Nervous System (6).

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Grainger Stewart: Polyneuritis (2).

WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic. 3.30 P.M., Dr. James Collier: Clinical Demonstration.

THURSDAY, March 1st.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Carmichael: Vascular Disease of the Brain (1).

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Mr. Elmquist: Demonstration of Re-educative Exercises (2).

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

THURSDAY, March 1st.—3.15 P.M., Dr. W. R. Reynell: Diagnosis and Treatment of Nervous Diseases.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, March 2nd.—4 P.M., Mr. Watkyn Thomas: Fractures of the Skull and Otology.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.

WEDNESDAY, Feb. 28th.—4 P.M., Dr. Rickword Lane: Interpretation of Blood Counts and other Blood Examinations.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James' Hospital, Ouseley-road, Balham S.W.

WEDNESDAY, Feb. 28th.—4 P.M., Mr. A. Sorsby: The Ophthalmoscope in General Practice.

NATIONAL COUNCIL FOR MENTAL HYGIENE.

WEDNESDAY, Feb. 28th.—5 P.M. (at 11, Chandos-street, Cavendish-square, W.), Mr. R. E. Roper: Work and Leisure.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-sqaure, W.C.

TUESDAY, Feb. 27th and following THURSDAY.—5 P.M., Dr. W. Griffith: Eczema.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, Feb. 27th.—4.15 P.M., Dr. A. Ramsbottom: Constitutional Disease Complicated by Pregnancy.

FRIDAY, March 2nd.—4.15 P.M., Mr. J. Morley: Demonstration of Surgical Cases.

ST. MARY'S HOSPITALS, Manchester.

FRIDAY, March 2nd.—4.15 P.M. (at the Whitworth-street West Hospital), Dr. Dougal: Occipito-posterior and Breech Cases, their Diagnosis and Management.

SALFORD ROYAL HOSPITAL.

FRIDAY, March 2nd.—4.15 P.M., Mr. J. B. Macalpine: Symptoms and Signs of Urinary Disease.

LEEDS GENERAL INFIRMARY.

TUESDAY, Feb. 27th.—4 P.M., Dr. Ingram: Demonstration of Dermatological Cases.

GLASGOW POST-GRADUATE LECTURES.

TUESDAY, Feb. 27th.—3.30 P.M. (in the Faculty Hall, Vincent-street), Dr. J. S. Fulton: Review of the Uses of Radiation in Treatment.

WEDNESDAY.—4.15 P.M. (at the Western Infirmary), Prof. A. Young: Surgical Cases.

Appointments

ASKER, FRANK, L.R.C.P. Lond., M.R.C.S., D.P.H., has been appointed Medical Officer of Health and School Medical Officer for Rowley Regis.

Certifying Surgeons under the Factory and Workshops Acts: BARNES, J. F. L., L.R.C.P. Lond., M.R.C.S. (Thorne, Oxford); PATON, S., M.B., Ch.B. Edin. (Tayport, Fife).

London County Council Hospital Staff.—The following appointments, promotions, and transfers are announced. A.M.O. (I.) and (II.)=Assistant Medical Officer, Grades I. and II.; Temp.=Temporary.

WESSON, A. S., M.D. Lond., M.R.C.P., SeniorA. M.O. (I.), Mile End.
SIMPSON, W., M.D. Glasg., A.M.O. (I.), St. Stephen's.
PATON, R. McI., M.B. Lond., A.M.O. (I.), Lambeth.
MARRIS, D. C., M.B. Lond., A.M.O. (II.), St. Mary, Islington.
HARCOURT, JOAN G., M.R.C.S., House Physician, St. Leonard's.
BAILEY, J. M., M.R.C.S., House Physician, High Wood.
PEARSON, H. E. S., M.B. Lond., House Physician, Lewisham.
DAVIS, HILDA M., M.B. Liverp., D.P.H., House Physician, North-Western.
PALEY, J. G., M.R.C.S., D.P.H., House Physician, North-Western.
RAMSAY, ISOBEL S. W., M.B. Aberd., House Physician, St. Olave's.
KLENERMAN, PAULINE, M.B. Edin., Clinical Assistant, Fulham.
GAYER, LENA B., M.R.C.S., Clinical Assistant, St. Mary Abbots.
ROOKE, CHRISTINE M., M.B. Lond., House Physician, St. Olave's.
WILSON, V. H., M.R.C.S., House Physician, St. James.
SPOONER, W. H. C., M.R.C.S., House Physician, St. James.
GOLDRING, H. J., M.B., Temp. A.M.O., Lambeth.
BARKER, C. M., M.R.C.S., A.M.O. (I.), City of London Institution.
O'SULLIVAN, J. A., M.B., A.M.O. (II.), St. Peter's.

Vacancies

For further information refer to the advertisement columns

Birkenhead General Hospital.—Sen. H.S. At rate of £150. Also Second H.S., H.P., and Cas. O. Each at rate of £100.
Birmingham, Little Bromwich Hospital for Infectious Diseases.—Two Jun. Asst. M.O.'s. Each £300.
Birmingham and Midland Eye Hospital, Church-street.—Asst. Surgeon.
Birmingham, Queen's Hospital.—Bacteriologist. £500. Also H.S. to Ear, Nose, and Throat Dept. At rate of £70.
Bradford, St. Luke's Municipal General Hospital.—H.P.'s and H.S.'s. Each at rate of £150.
Brentford and Chiswick, Borough of.—Asst. M.O.H., &c. £500.
Brentwood, Essex, High Wood Hospital for Children.—Asst. M.O. £350.
Bridgend, Glamorgan County Mental Hospital.—Med. Supt. £1100.
Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.
Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Hon. Second Asst. in Out-patient Dept.
Central Middlesex County Hospital, Willesden.—Jun. Res. Asst. M.O. £250.
Charing Cross Hospital, W.C.—Hon. Ophth. S., Hon. Clin. Asst. to X Ray and Electro-therapeutic Dept. Also Surg. Reg. £150. Obstet. and Gyn. Reg. and Registrar for Ear, Nose, and Throat Dept. Each £100.
City of London Hospital for Diseases of the Heart and Lungs Victoria Park, E.—Asst. Tuber. O. £600.
Colchester, Essex County Hospital.—Asst. H.S. £120.
Croydon General Hospital.—Cas. H.S. £125.
Dewsbury General Infirmary.—Hon. Visiting Physician.
Doncaster, Royal Infirmary.—H.S., and H.S. to Ear, Nose and Throat, and Eye Dept. Each £175.
Dorchester, Dorset County Hospital.—H.S. At rate of £160.
Dreadnought Hospital, Greenwich, S.E.—H.P. and H.S. Each at rate of £110.
Durham County Council.—Asst. Welfare M.O. £500.
East Ham Memorial Hospital, Shrewsbury-road, E.—H.P. and H.S. to Spec. Depts., and Cas. O. At rate of £150 and £120 respectively.
General Post Office, Headquarters Medical Dept.—Asst. M.O. £505.
Grimsby County Borough.—Clin. Tuber. O. and Chief Asst. M.O.H. £750.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Surg. Reg. £100.
Hospital for Sick Children, Great Ormond-street, W.C.—H.P. and H.S. Each at rate of £100.
Hospital for Tropical Diseases, Gordon-street, W.C.—H.P. At rate of £120.
Infants Hospital, Vincent-square, Westminster.—H.P. £75.
Leamington Spa, Warneford General Hospital.—Res. H.S. At rate of £150.
Leicester Royal Infirmary.—H.P., H.S., Reg. and Cas. O.'s. Each at rate of £125. Also Jun. Cas. O. At rate of £100.
Lincoln, Lincolnshire Joint Board for Mentally Defective.—Medical Adviser. £800.
Liverpool, County Mental Hospital, Rainhill.—Asst. M.O. £500.
Liverpool and District Hospital for Diseases of the Heart.—H.P. At rate of £100.
London Jewish Hospital, Stepney Green, E.—Hon. Asst. Gynæcologist.
London Missionary Society.—Medical Woman for Jiagany, North India.
Luton, Bute Hospital.—Consulting Radiologist.
Manchester, Ancoats Hospital.—Asst. Hon. Surgeon, &c.
Manchester, Christie Cancer Hospital and Holt Radium Institute. Surg. O. £150. Also Asst. M.O. At rate of £500.
Manchester Royal Children's Hospital.—Two Asst. M.O.'s. Each at rate of £150.
Manchester Royal Infirmary.—Hon. Asst. Physician.
Maudsley Hospital, Denmark-hill, S.E.—Second Asst. M.O. £625.
Middlesex County Council.—District M.O.'s. £50 to £300. Also Public Vaccinators.
Newark General Hospital.—Res. H.S. £175.
Northampton County Mental Hospital, Berrywood.—Jun. Asst. M.O. £350.
Norwood Hospital for Children, Elder-road, S.E.—M.O. £500.
Oxford, Magdalen College.—Official Fellowship and Tutorship in Natural Science. £600.
Paddington Green Children's Hospital, W.—Hon. Radiologist. Also Hon. Asst. S. to Ear, Nose, and Throat Dept.
Plymouth, South Devon and East Cornwall Hospital.—H.S. At rate of £120.
Portsmouth City.—Sen. Asst. M.O.H., &c. £750.
Prince of Wales's General Hospital, N.—Jun. H.P. and Two Jun. H.S.'s. Each at rate of £90. Also Hon. Med. Reg. Also Hon. Surg. Reg. Each £100.
Queen's Hospital for Children, Hackney-road, E.—H.P. and Cas. O. Each at rate of £100.
Radium Institute, Riding House-street, W.—H.S. At rate of £150.
Richmond, Surrey Royal Hospital.—Jun. H.S. At rate of £100.
Rotherham County Borough Education Committee.—Asst. School M.O. £500.
Rotherham Hospital.—Sen. H.S. £200.
St. John's Hospital for Diseases of the Skin, 49, Leicester-square, W.C.—Out-patient and In-patient Med. Regs. Each £50.
St. Leonards-on-Sea, Buchanan Hospital.—Sen. and Jun. H.S. At rate of £175 and £125 respectively.
St. Mary's Hospital, W.—Third Asst. Pathologist. £250.
St. Marylebone Institution, Northumberland-street, W.—Temp. M.O. £550. Also District M.O., Area IV. Dist. £200.
St. Pancras Borough Council.—M.O.H. £1200.
St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.—H.S. At rate of £75.
Salford Royal Hospital.—H.P., H.S., and Cas. H.S. Each at rate of £125.
Sheffield, Jessop Hospital for Women.—Res. M.O. At rate of £150.
Sheffield Royal Hospital.—Jun. Asst. Pathologist. £300.
Surrey Royal County Hospital.—Res. Med. and Surg. O. and Reg. £250.
Swanley, Kent, White Oak Hospital.—Res. M.O. £200.
University of London.—University Chair of Anatomy. £1300.
Walsall General Hospital.—H.S. At rate of £150.
Watford and District Peace Memorial Hospital.—Res. H.S. and H.P. Each at rate of £150.
West Ham County Borough, Education Committee.—Asst. School M.O. £500.
West London Hospital, Hammersmith-road, W.—H.P. and H.S. Also H.S. to Throat, Nose, and Ear Dept. Each at rate of £100.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Hedon, Yorks, and Arnesby, Leicester.

Births, Marriages, and Deaths

BIRTHS

COGGIN.—On Feb. 16th, at Northlands House, the wife of Dr. Geoffrey Coggin, of Raymond-road, Southampton, of a son.
HOLMES.—On Feb. 14th, at Albert-road, Southport, the wife of John Holmes, M.B., M.R.C.P., of a daughter.
WOODHOUSE.—On Feb. 12th, at Merry-Tree Corner, Gidea Park, the wife of Dr. R. A. Woodhouse, of a son.

MARRIAGES

HESELTINE—CAMPBELL.—On Feb. 16th in London, Michael Heseltine, C.B., to Dame Janet M. Campbell, D.B.E., M.D., M.S.

DEATHS

CAVE.—On Feb. 16th, at Circus, Bath, Edward John Cave, M.D., F.R.C.P., aged 74.
DOBSON.—On Feb. 19th, at his home in Leeds, Joseph Faulkner Dobson, M.S., F.R.C.S., professor of surgery in the University of Leeds.
LEWERS.—On Feb. 9th, at his residence, Sussex-gardens, Hyde Park, W., after a long illness, Arthur Hamilton Nicholson Lewers, M.D., F.R.C.P. Lond.
PARK.—On Feb. 11th, at Staffa, Selsey, Sussex, William Charles Cunningham Park, M.R.C.S. Eng., L.R.C.P. Lond., late of Hither Green and Lee, London, aged 66.
ROBEY.—On Feb. 17th, at St. John's-hill, S.W., Ralph Prime Robey, M.R.C.S. Eng., in his 84th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

INDEX TO "THE LANCET," VOL. II., 1933

THE Index and Title-page to Vol. II., 1933, which was completed with the issue of Dec. 30th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 7, Adam-street, Adelphi, London, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

NOTES, COMMENTS, AND ABSTRACTS

IN DEFENCE OF DOWSERS

THE art of water-divining—part of the stock-in-trade, perhaps, of the old magicians—has survived into our own day, and, despite a growing distrust of the marvellous, public bodies still employ dowsers to recommend sites for well-sinking. Indeed, the present alarm over continuing drought has led the British Society of Dowsers to offer the services of diviners, both amateur and professional, through the press.

Dr. G. A. M. Lintott, being among the sceptics, recently conducted a careful experiment in the physiological department at Guy's Hospital,[1] and has convinced himself that, though no one tested could detect the presence of still water, there are undoubtedly people who are sensitive to the presence of water in motion. His experiments, he says, were conducted in a strong spirit of disbelief. A pipe was arranged beneath a platform, and the flow of water through the pipe could be controlled by a tap, without the knowledge and out of sight of the diviner. He found that when the water in the pipe was flowing, the people tested could be divided into three groups: those in whose hands the divining rod remained inert when they were standing over the pipe; those in whom a slight response was elicited when the flow of water was large; and a small group of people who seemed to be notably sensitive to the presence of moving water, as shown by the upward movement of the forked twig, or the inward deflection of the two L-shaped metal rods which some dowsers prefer. Those in the third group were able to map out with considerable accuracy the courses of unseen drains in which water was flowing when they were tested out of doors in a locality unknown to them. This contradicts the experience of Prof. J. W. Gregory, the geologist, who found that diviners were often ludicrously astray when tested over areas where the distribution of water was accurately known.[2] It is consistent, on the other hand, with the views of Mr. Theodore Besterman, investigation officer of the Society for Psychical Research, who says in *The Listener* of Jan. 24th that a Major Pogson, at one time official water-diviner of the Government of Bombay, "over and over again succeeded in finding water in practical quantities after expert geologists and water engineers had failed."

At least there is no reason, Dr. Lintott assures us, to assume that the evolutions of the rod are miraculous. The movement is conveyed to it by the dowser, in whose forearm muscles a definite increase of tension can be felt as the rod moves. A similar increase in tone was detected in the masseter muscles when the diviner was asked to cross moving water while holding a rubber bulb, connected with a tambour, between his teeth. Moderately thick gloves were sufficient to prevent the movement from being transmitted from the hands to the rod, and a response was not obtained when the short limbs of the rod were held in sockets so that there was no contact between them and the diviner's hands. Dr. Lintott thinks that the twig or rods not only act as indicators, but help the diviner to achieve the proper state of muscular tension. Experienced dowsers were seen to adopt a shuffling gait as though to increase voluntarily the tone in the muscles of the lower limbs; when they were wheeled over running water in a chair, with their legs flaccid and dangling, no response was obtained, but when they were wheeled over it standing upright, the response was as great as if they had walked. A slippery surface, such as glass, interfered with reception, but not if it was covered with a duster so as to give a grip to the feet. Otherwise, substances such as lead, brass, aluminium, rubber, and asbestos had no influence on reception, except that rough surfaces tended to exaggerate it.

As a final experiment, three dowsers, each acting independently and accompanied only by an impartial observer, were asked to detect an area of subterranean moving water at a certain site in Sussex; each marked out the same spot, though unaware of the findings of his colleagues, and at the time of publication of Dr. Lintott's paper a bore-hole was to be sunk at this site. It is only fair to remember, however, as Prof. Gregory pointed out, that though water is often found where the rod indicates its presence, negative findings are rarely tested; and Dr. Lintott admitted that it would not be possible, in his experiment, to sink another bore-hole in a negative area, owing to the high cost of the operation. He thought that the evidence was sufficient to show that water-divining is a genuine phenomenon, however, deserving further study, and suggested tentatively that the reception of the stimulus and the production of the response are subconscious, and concerned with the more primitive centres rather than the cerebral cortex. Among the many letters which followed the publication of his paper was one packed with romantic suggestions, signed "T. K. Eipselig," which postulated that the stimulus conveyed by running water is likely to be vibratory, and that those persons who are sensitive may possess some vestigial remnant of the "lateral line" of fish, the organ sensitive to vibrations in fluid.

Water-divining thus remains a mystery, agreeably flavoured to tickle every palate. Those with a sneaking regard for witchcraft will find it significant that only running water elicits a response from the rod; reasonable people will be glad to see the business put on a scientific footing at last; while if Dr. Eipselig is right, the sceptics can console themselves with the thought that there is something fishy about water-diviners after all.

[1] Guy's Hosp. Gaz., 1933, xlvii., 255, 282.
[2] See THE LANCET, 1927, ii., 1144.

THE STATE OF THE TEETH AS A GUIDE TO PROGNOSIS IN TUBERCLE

AT a meeting of the Tuberculosis Association held in London last week, Dr. F. W. Broderick, dental surgeon to the Royal National Sanatorium at Bournemouth, said he did not accept any of the theories current as to the causation of dental caries and pyorrhœa alveolaris. These were, he thought, merely symptoms of some constitutional disturbance, the main feature of which was a disturbance in the acid-base equilibrium of the blood: acidosis tended towards caries, alkalosis towards pyorrhœa. These changes in turn were regulated by the vegetative nervous system which presided over the innervation of all the involuntary organs and tissues of the body. Reaction to disease depended upon the stability of this system and upon non-specific immunity factors which would eventually decide not only the occurrence of disease but its outcome. In pulmonary tuberculosis it was quite as much the reaction to the infection as the virulence of that infection that determined the prognosis; the patient with sympathetic predominance would probably suffer from the destructive type, and the patient with parasympathetic predominance from the fibrotic type of lesion. Dr. Broderick drew support from Balint and Weiss, who had shown that all inflammatory phenomena were influenced by the acid-base balance of the tissues of the individual; and from Leriche and Policard, who had found that bone resorption and ossification depended primarily upon circulatory over-activity and stasis. In tuberculosis the same factors came into play. In 100 cases investigated by him at Bournemouth, the state of the teeth had given a useful hint of the patient's reactivity to his infection, and had made it possible to divide cases into two distinct groups. In the caries group there was the underweight, with increased metabolic rate, increased reactivity, increased permeability of blood-vessels, increased calcium-potassium ratio, increased acidity, and a diminution in the size

of the protein granule in the colloidal system; in the pyorrhœa group was the overweight, with diminished metabolic rate and vessel permeability, altered calcium-potassium ratio with lessened calcium, increased alkalinity, and an increase in the size of the protein granule.

OSTEOCHONDRITIS DISSECANS

In a review of the pathology and ætiology of osteochondritis dissecans (Brit. Jour. Surg., 1933, xxi., 67) Mr. H. A. T. Fairbank agrees with other authorities that while the condition is occasionally seen in the elbow, ankle, hip, and other joints, it is much more common in the knee. Though it is usually said that males are more liable to it than females, in his series of 20 cases the incidence is equally divided between them.

He adduces strong arguments in favour of the traumatic theory and regards the condition as due to a subchondrial fracture. If this is accepted, there are two explanations why it so often occurs in the knee-joint. One school thinks that the fracture is produced by a force transmitted through the patella when falling on the flexed knee, a not unusual incident at an age when the subchondrial bone is said to be especially brittle. The other school thinks that the inner tubercle of the spine of the tibia may impinge on the femoral condyle in rotatory movements of the tibia. Fairbank sides with the latter. He points out that the inner tubercle is always well developed in these cases, and experimentally it can be seen that if the tibia is forcibly rotated in the flexed position it impinges on the femoral condyle at the point which is the most frequent site of the lesion. He disposes of the infarction theory by quoting the observations of Phemister, who says that when the fragment is pedunculated the bone is alive. This observation cannot be reconciled with a theory that presupposes necrosis of the fragment before its separation. Furthermore, he lays emphasis on the absence of granulation tissue in the hollow when examined at operation; so how, he asks, can the fragment, if it is a sequestrum, be cast off without the granulation tissue which is essential for the process?

The reason why these subchondrial fractures tend not to heal is that they are painless, and the joint continues to be used. Fairbank advises exploration in all cases that give rise to symptoms, and when the articular cartilage is soft, shredded, and rough, even though unbroken, it should be excised, any underlying loose bone being removed with it.

"MORNING MISERIES"

Dr. W. B. Cosens writes: "This condition of mind, so named by the late Sir Andrew Clark, deserves more heed than is usually bestowed on it. When told by a middle-aged patient of either sex, 'I have such a rotten feeling when I first wake up, everything seems hopeless,' the doctor is too apt to forget to ask the few sympathetic questions which will put him wise. As a matter of fact the symptomatology varies little. The miseries are more common in men than women; they only occur after a good night's sleep, lasting on the average one hour, or longer if the victim remains in bed. They seldom occur after a night of dreams. They consist of a mental deluge of imaginary coming disasters, accompanied with a feeling of intense depression, arising without sufficient cause. They seem to destroy any fighting spirit, and to replace it with intense self-pity. I do not include under the term those who suffer in the early morning from real troubles and anxieties, or the after-effects of alcohol; in these the clinical picture is quite different. I can recall three cases of early morning suicides in persons whose only complaint had been of this dreadful feeling on waking.

"But morning miseries afflict the young as well as the old, although most common in the fourth to the sixth decade. Among adolescents they are due to faulty mental construction, which can often be traced to one or other parent. The late middle-aged usually give a long history of being "highly strung," and a shorter one of loss of mental balance over trifles. This suggests failure of brain-cells to adjust rapidly from a condition of profound sleep; it is a case of delayed function.

"The duty of the doctor is to protect the sufferer during this period of delay. To administer advice about introspection is just waste of energy. To order a bottle of medicine is worse; it just serves to remind the victim three times a day that he was miserable on waking. Tell him rather to follow the habit of the great Duke of Wellington, to turn out when he turns over. As soon as he is out of bed he should actively engage in some mechanical office—make a cup of tea, prepare clothes for wearing, black his boots, dust out his room, in the country go for a ride—no matter what, so long as he remains employed."

*** Sir Andrew Clark was dealing in his presidential address to the Clinical Society of London (see THE LANCET, 1883, i., 223) with "that interesting and instructive group of clinical affections which is unconnected, except causally, with sensible structural alterations of the tissues and organs," and the first illustration he gave of the group was the "morning agony of middle-aged nervous people, often the precursor of melancholia. A man awaking at early dawn is conscious of undefinable malaise and unrest; his mental and moral outlook becomes dark and gloomy; aching pains arise in the limbs; unable to lie still, he tosses restlessly about his bed; the malaise deepens into distress, and he groans; a cold sweat breaks forth over all his body; and then in a few minutes the attack subsides, and the patient finds himself in his accustomed health and spirits."—ED. L.

SCIENTIFIC HYBRIDS

Major H. Williamson, I.M.S., writes: Is it not time to check the growth of the hideous verbal hybrids which are springing up in our scientific garden? Perhaps the zeal of the research worker has outrun his erudition, but surely such abominations as "hyperfunction" and "antibody" could be replaced by something more worthy of our learned profession, while many other regrettable examples will occur to the educated mind. Sir Clifford Allbutt, a fine scholar, coined the very good word "hyperpiesis," which is now being slowly replaced by the hybrid "hypertension." Let us either retain his word or call the condition "supertension," even at the risk of being accused of emulating the perpetrator of "supercinema," for we can confound our accusers by replying that if they find the word necessary they should say "hypercinema."

CANADIAN MEDICAL DIRECTORY

We have received from the Canadian Medical Publishing Co., of Montreal, the fifteenth edition of the Canadian Medical Directory (the title page calls it the fourteenth), being a register of physicians, dentists, and druggists of the Dominion. The directory opens with a general section containing the personnel of the Medical Council of Canada, followed by a list of colleges, councils, and medical societies throughout the provinces, and a survey of hospitals classified according to their geographical position, with their number of beds and a brief indication of their scope. The directory proper takes each province in succession, first citing the local acts regulating medical practice, then giving information about provincial, university, and medical schools, and finally a classified list of practitioners, with a street list of the larger centres. It is the object of the publishers to make the directory as accurate and reliable as possible, and subscribers are requested to coöperate by notifying any errors which come to their attention. The volume is indispensable for its purpose, but its value would, we think, be enhanced by a table of contents giving the reader his cue where to find this and that, and by further attention to the page captions. The price of the directory in paper cover is 7 dollars; cloth bound 10 dollars.